Plankton Monitoring in the Western Isles Region of the Bay of Fundy during 1999-2000

J.L. Martin, M.M. LeGresley and P.M. Strain

Science Branch, Maritimes Region
Fisheries and Oceans Canada
Biological Station
531 Brandy Cove Road, St. Andrews, NB
E5B 2L9

2006

Canadian Technical Report of Fisheries and Aquatic Sciences 2629

Fisheries and Oceans Canada | Pêches et Océans Canada

Canada

Canadian Technical Report of
Fisheries and Aquatic Sciences

Technical reports contain scientific and technical information that contributes to existing knowledge but which is not normally appropriate for primary literature. Technical reports are directed primarily toward a worldwide audience and have an international distribution. No restriction is placed on subject matter and the series reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries and aquatic sciences.

Technical reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report is abstracted in *Aquatic Sciences and Fisheries Abstracts* and indexed in the Department's annual index to scientific and technical publications.

Numbers 1-456 in this series were issued as Technical Reports of the Fisheries Research Board of Canada. Numbers 457-714 were issued as Department of the Environment, Fisheries and Marine Service, Research and Development Directorate Technical Reports. Numbers 715-924 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Technical Reports. The current series name was changed with report number 925.

Technical reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page. Out-of-stock reports will be supplied for a fee by commercial agents.

Rapport technique canadien des
sciences halieutiques et aquatiques

Les rapports techniques contiennent des renseignements scientifiques et techniques qui constituent une contribution aux connaissances actuelles, mais qui ne sont pas normalement appropriés pour la publication dans un journal scientifique. Les rapports techniques sont destinés essentiellement à un public international et ils sont distribués à cet échelon. Il n'y a aucune restriction quant au sujet; de fait, la série reflète la vaste gamme des intérêts et des politiques du ministère des Pêches et des Océans, c'est-à-dire les sciences halieutiques et aquatiques.

Les rapports techniques peuvent être cités comme des publications complètes. Le titre exact parait au-dessus du résumé de chaque rapport. Les rapports techniques sont résumé dans la revue *Résumés des sciences aquatiques et halieutiques*, et ils sont classés dans l'index annual des publications scientifiques et techniques du Ministère.

Les numéros 1 à 456 de cette série ont été publiés à titre de rapports techniques de l'Office des recherches sur les pêcheries du Canada. Les numéros 457 à 714 sont parus à titre de rapports techniques de la Direction générale de la recherche et du développe-ment, Service des pêches et de la mer, ministère de l'Environnement. Les numéros 715 à 924 ont été publiés à titre de rapports techniques du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom actuel de la série a été établi lors de la parution du numéro 925.

Les rapports techniques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

106-03554/

Canadian Technical Report of
Fisheries and Aquatic Sciences 2629

January 2006

Plankton Monitoring in the Western Isles Region of the Bay of Fundy during 1999-2000

by

J. L. Martin[1], M. M. LeGresley[1] and P. M. Strain[2]

[1]Fisheries and Oceans Canada,Biological Station, 531 Brandy Cove Road,
St. Andrews, New Brunswick, Canada E5B 2L9
[2]Fisheries and Oceans Canada, Institute of Ocean Sciences,
PO Box 6000, Sidney, B.C. V8L 4B2

This is the two hundred and sixty-sixth Technical Report of
the Biological Station, St. Andrews, NB

© Her Majesty the Queen in Right of Canada, 2006

Cat. No. Fs 97-6/2629E ISSN 0706-6457

Correct citation for this publication:

Martin, J. L., M. M. LeGresley, and P. M. Strain. 2006. Plankton monitoring in the Western Isles region of the Bay of Fundy during 1999-2000. Can. Tech. Rep. Fish. Aquat. Sci. 2629: iv + 88 p.

TABLE OF CONTENTS

Abstract iv
Introduction 1
Materials and methods 2
Results 3
Phytoplankton 3
Salinity 4
Temperature 4
Nutrients 4
Discussion 5
Phytoplankton 5
Nutrients 7
Acknowledgments 8
References 8
Figures 11
Appendix 1 - Species observed during 1999-2000 16
Appendix 2 - Phytoplankton densities as number of cells·L^{-1} in 1999-2000 18
Appendix 3 - Plant nutrient, temperature and salinity data during 1999-2000 83

ABSTRACT

Martin, J.L., LeGresley, M.M., and Strain, P.M. 2006. Plankton monitoring in the Western Isles region of the Bay of Fundy during 1999-2000. Can. Tech. Rep. Fish. Aquat. Sci. 2629: iv + 88 p.

A monitoring program was initiated in May 1987 to study phytoplankton populations in the Western Isles region of the Bay of Fundy, southwest New Brunswick. This report provides another 2 yr of data to add to the results from 1987-98 published previously. Samples were collected for phytoplankton distribution and abundance as well as plant nutrients (ammonia, nitrate, phosphate and silicate) at five locations – Brandy Cove, Lime Kiln Bay, Deadmans Harbour, the Wolves Islands and mid-Passamaquoddy Bay. Additional parameters measured included secchi depth, and depth profiles for fluorescence, temperature and salinity. Samples were collected at the surface from all locations and additional discrete depths of 10 m, 25 m, and 50 m at the Wolves Islands, and 5-m and 15-m depths were initiated in Lime Kiln as of June 2000.

Dominant species (>10^3 cells·L^{-1}) during the 2-yr period were *Chaetoceros socialis*, *Chaetoceros* spp., *Dactyliosolen fragilissimus*, *Ditylum brightwellii*, *Eucampia zodiacus*, *Guinardia delicatula*, *Leptocylindrus danicus*, *Pseudo-nitzschia delicatissima* group, *Skeletonema costatum* and *Mesodinium rubrum*. *M. rubrum* and the *P. delicatissima* group have been observed at concentrations >10,000 cells·L^{-1}during all of the past 14 yr. *Alexandrium fundyense* (the organism responsible for producing paralytic shellfish toxins) concentrations exceeded 10^4 cells·L^{-1} in all but 2 yr during the 1988-96 period, cell densities were 8.2 and 6.7 x 10^3 cells·L^{-1} in 1997 and 1998, respectively, and the highest concentrations observed during 1999 were 3.2 x 10^3 cells·L^{-1} in late July, while the highest densities recorded for 2000 were 2.5 x 10^3 cells·L^{-1}.

During the 2 yr, the lowest temperature (1.0°C) was measured at Brandy Cove while the highest temperature was recorded at the mid-Passamaquoddy site (17.0°C), both occurring in 1999. Lowest salinities (21.19 psu) were measured at Brandy Cove. Nitrate values ranged from 0.09-12.10 µM; ammonia from 0.04-8.10 µM; nitrite from 0.05-0.68 µM; phosphate levels ranged from 0.29-1.26 µM and silicate from 0.30-19.7 µM.

RÉSUMÉ

Martin, J.L., LeGresley, M.M., and Strain, P.M. 2006. Monitoring in the Western Isles region of the Bay of Fundy during 1999-2000. Can. Tech. Rep. Fish. Aquat. Sci. 2629: iv + 88 p.

Un programme de surveillance a été lancé en mai 1987 pour étudier les populations phytoplanctoniques de la région Ouest de la Baie de Fundy, au sud-ouest du Nouveau- Brunswick. Ce rapport ajoute deux années de données aux résultats déjà publiés des années 1987-98. Les échantillons d'eau pour l'analyse de phytoplancton et de nutriments (silicates, phosphates, nitrates, nitrite et ammoniac) ont été prélevés à cinq emplacements (Brandy Cove, Lime Kiln, Deadmans Harbour, près des îles Wolves et mi-baie Passamaquoddy). Le phytoplancton a été identifié et dénombré et les autres paramètres tels que la profondeur du secchi, le profil de la température, de la fluorescence et de la salinité en profondeur ont été mesurés aussi. Aux cinq emplacements, les échantillons ont été prélevés à la surface ainsi qu'à 10 m, 25 m et 50 m aux îles Wolves et à 5m et 15m à Lime Kiln commençant en juin 2000.

Les espèces principales (>10^3 cellules·L^{-1}) pendant ces deux années étaient *Chaetoceros socialis*, *Chaetoceros* spp., *Dactyliosolen fragilissimus*, *Ditylum brightwellii*, *Eucampia zodiacus Guinardia delicatula*, *Leptocylindrus danicus*, le complexe *Pseudo-nitzschia delicatissima*, *Skeletonema costatum*, *Thalassiosira* spp. et *Mesodinium rubrum*. Le complexe *Pseudo-nitzschia delicatissima* et *M. rubrum* ont été observés pendant les 14 dernières années en concentrations >10 000 cellules·L^{-1}. Tandis que l'*Alexandrium fundyense*, l'organisme responsable de l'intoxication paralysante par les mollusques (IPM) atteignait un niveau élevé (>10^4 cellules·L^{-1}) à chaque année sauf deux pour la période 1988-96, les concentrations maximales en 1997 et 1998 n'étaient que de 8.2 X 10^3 et de 6.7 X 10^3 cellules·L^{-1}, tandis qu'en 1999 et 2000 les concentrations les plus élevées n'atteignaient que 3.2 X 10^3 et 2.5 X 10^3 cellules·L^{-1} respectivement.

Pendant ces deux années, la température minimale (1.0°C) a été observée à Brandy Cove tandis que la température maximale (17.0°C) a été notée à notre station mi-baie Passamaquoddy ces deux extrêmes survenant en 1999. Les salinités minimales (21.19) ont eu lieu à Brandy Cove. La teneur en nitrates variait de 0.09 à 12.1 µM; d'ammoniac de 0.04 à 8.1; de nitrite de 0.05 à 0.068 µM; de phosphate de 0.29 à 1.26 µM et de silicates de 0.30 à 19.7 µM.

INTRODUCTION

A phytoplankton monitoring program was initiated in the Western Isles region of the Bay of Fundy in 1987. The study was initiated due to growing concerns that the incidents involving harmful algal blooms (HABs) seemed to be increasing in intensity, frequency and geographic distribution throughout the world (Anderson 1989; Smayda 1990; Hallegraeff 1993). Incidences of fish mortalities, especially those held captive in net pens, had also been increasing. Some of these increases can be attributed to increased awareness, both in the scientific and public communities, as well as the increased use of inshore coastal waters for aquaculture, tourism and other activities.

The purposes of the phytoplankton study when it was initiated were: to establish baseline data on phytoplankton populations since little detailed work had been published since studies by Gran and Braarud (1935); to identify harmful algal species that could potentially cause harm to the aquaculture industry; to provide an early warning to the aquaculture industries by sorting and identifying samples soon after collection; and to determine patterns and trends in phytoplankton populations. Another purpose of the study was to determine whether there were environmental changes, such as changing trends in phytoplankton populations or nutrient loads, as a result of the salmon industry. In addition, it could provide an early warning to regulatory agencies such as the Canadian Food Inspection Agency (CFIA) for the occurrences of species that produce toxins resulting in shellfish toxicities and closures of shellfish beds to harvesting.

HABs have been known to affect fish through either of the following methods: neurotoxins, gill damage (mechanically or through the production of hemolytic substances) or asphyxiation (oxygen depletion). Farmed fish are particularly vulnerable to harmful phytoplankton blooms because they do not have the luxury of being able to swim away to avoid blooms, and heavy mortality can occur within hours. The salmonid mariculture industry in southwest New Brunswick consisted of more than 90 active farms which could, during the sampling period, potentially be impacted by HABs.

Although the majority of phytoplankton species occur in the environment without causing adverse effects, there are a few that are known to cause harm. For example, in the Bay of Fundy, *Alexandrium fundyense* and *Pseudo-nitzschia pseudodelicatissima* are species responsible for producing toxins associated with the syndromes paralytic shellfish poisoning (PSP) and amnesic shellfish poisoning (ASP or domoic acid poisoning). In these cases, shellfish that have been feeding on harmful species accumulate toxins with no obvious effects to the shellfish themselves. The toxins are then stored in their tissues, and when the shellfish are eaten by vertebrate consumers, including humans, illness and, in some cases death, can result. PSP toxins and resulting shellfish toxicity have been around in the Bay of Fundy for hundreds of years (Prakash et al. 1971, Martin and Richard 1996) and both our studies and PSP shellfish toxicity results show that *A. fundyense* occurs annually (Martin and White 1988; Martin et al. 1999, 2001).

Domoic acid was first detected in shellfish in the Bay of Fundy in 1988 and the causative species was determined to be *P. pseudodelicatissima* (Martin et al. 1990; Haya et al. 1991). During this event, the shellfish harvesting areas that were declared closed to harvesting and unsafe for human consumption were located in Passamaquoddy Bay. It was not until 1995 that shellfish beds were closed again in the Bay of Fundy as a result of unacceptable levels of domoic acid and, in this case, the areas affected were located outside Passamaquoddy Bay (Martin et al. 1998).

A. fundyense has not only been responsible for human illnesses as a result of PSP, but it has also affected fisheries. For example, in 1976 and 1979, hundreds of tonnes of Atlantic herring, *Clupea harengus harengus*, died from PSP toxins that the herring had accumulated through the food chain (White 1980). Subsequent studies showed that cod, pollock, flounder and salmon could potentially be affected (White 1981). In 1987, 14 humpback whales died after feeding on mackerel (*Scomber scombrus*) that had eaten zooplankton that, in turn, had fed on *A. fundyense* (MacKenzie 1988; Haya et al. 1990). There has been the suggestion that right whales feeding on contaminated zooplankton could be affected by harmful algal blooms in Grand Manan Basin. Suggested modes of action include potentially decreased respiratory capabilities, feeding behaviour and reproductive condition (Durbin et al. 2002).

Results from the earlier years of the monitoring program have been published previously (Wildish et al. 1988, 1990; Martin et al. 1995, 1999, 2001). This report presents results from analyses of phytoplankton, plant nutrients, temperature and salinity during the 2 yr, 1999 and 2000.

MATERIALS AND METHODS

The number of sampling sites in the southwest New Brunswick area of the Bay of Fundy has changed since the program started in 1987. Initially, 12 sites were sampled, with 10 located in the Letang area, where the majority of the aquaculture sites were located at that time, and the remaining two in Harbour de Lute (Campobello Island), in close proximity to another aquaculture site. The following year, the number of sampling sites expanded to 18, with additional sites in Passamaquoddy Bay around Deer Island, Deadmans Harbour and an offshore site at the Wolves Islands. In 1992, sampling was reduced, due to financial constraints, to the four stations that continue to be monitored today (Fig. 1). These include: Brandy Cove (#17 – a brackish site influenced by the Saint Croix River estuary), Lime Kiln Bay (#3 – Letang estuary where a number of aquaculture sites are located), Deadmans Harbour (#15 – an open bay with offshore influence), and the Wolves Islands (#16 – an offshore indicator site). An extra sampling site was added in mid-Passamaquoddy Bay in 1998 following observations of brick-red patches of water (Fig. 1).

Sampling was conducted during the 2 yr, 1999 and 2000, aboard the research vessel, CCGS PANDALUS III. Weekly samples were collected from May 13 to the end of September in 1999 and from May 12 to the end of October in 2000. Biweekly sampling was conducted in the month of October 1999 and monthly during all other months in 1999 and 2000.

A Seabird Model 25 CTD profiler was used to collect vertical profiles of temperature, salinity and fluorescence at each site. Salinity results are reported on the Practical Salinity Scale (psu).

Phytoplankton and nutrient samples were collected at the surface by bucket from all four stations, and at depths of 10 m, 25 m, and 50 m with a Niskin bottle at station #16. In late June of 2000, additional depths of 5 m and 15 m were sampled, but are not included in this report. During the summer months, a 10-m vertical plankton haul was made with a 20-µm mesh net, 0.3 m in diameter. A subsample was preserved with formalin:acetic acid (1:1 by volume) for further phytoplankton identification and scanning electron microscopy (SEM). In addition, a live sample was taken for identification and culture of selected organisms. Live phytoplankton samples were immediately iced for the return trip to the laboratory.

Samples for nitrate+nitrite (subsequently referred to as nitrate), nitrite, ammonia, phosphate and silicate were frozen immediately and later measured using a Technicon Autoanalyzer II as described by Strain and Clement (1996).

Samples and data were recorded according to date, location and depth; as well, an independent identification number was assigned at the time of collection. Information was entered, maintained and accessed in a database. Individual net haul results and individual depth profiles from the Seabird profiler were stored separately.

Water samples (250 mL) were immediately preserved with 5 mL formalin:acetic acid. Later, 50-mL subsamples were settled in Zeiss counting chambers for 16 h. All phytoplankton greater than 5 µm were identified and enumerated (as cells•L^{-1}) with the Ütermohl technique using a Nikon inverted microscope (Sournia 1978). Further identification was done using either a JEOL JSM-5600 scanning electron microscope (SEM) or a Hitachi S-2400 SEM. Sample preparation for SEM was as follows: samples were rinsed with 250 mL distilled water (prefiltered 1.3 µm) onto a 3-µm (Poretics) polycarbonate filter using a 25-mm Millipore vacuum filtration apparatus. Diatoms were cleaned with the permanganate oxidation method (Hasle and Fryxell 1970) while samples with thin walls and/or unarmoured dinoflagellates were dehydrated in a series of ethanol solutions (20, 50, 70, 85, 95%) prepared with distilled water and absolute ethanol for a minimum of 10 min at each step, finishing with three rinses of 100% ethanol. For the final drying step, three changes of hexamethyldisilazane (HMDS) were used (Bray et al. 1993; Kaczmarska et al. 2000) a minimum of 10 min each, allowing the last rinse to evaporate slowly at room temperature. Filters were mounted on stubs, and then coated with gold-palladium in a Hummer sputtering system.

For species identification purposes, the *P. delicatissima* group included species of both *P. pseudodelicatissima* and *P. delicatissima*; the *P. seriata* group included the species *P. fraudulenta, P. multiseries, P. pungens, P. seriata and P. subpacifica. Alexandrium fundyense* cells included all its life cycle stages, and when different stages in its life cycle were observed, they were recorded separately. Its life cycle stages include: duplets or triplets (asexually dividing cells) that are observed early in the bloom, fusing (sexual division where two cells fuse together), planozygotes (large cells formed from the fusing cells) and cysts or resting spores.

RESULTS

There were a total of 29 and 30 sample days in 1999 and 2000, respectively.

PHYTOPLANKTON

Numbers of samples analyzed for phytoplankton density were 224 in 1999 and 281 in 2000. During the 2 yr, 153 species of phytoplankton and smaller zooplankton were identified. In addition other groups where species were not identified were classed as armoured flagellates, unarmoured dinoflagellates, centrale diatoms, ciliates, copepods, flagellates and tintinnids (Appendix 1). Identification and enumeration results for phytoplankton are listed in Appendix 2. Organisms that were observed at concentrations greater than 10,000 cells·L^{-1} during the 2 yr are listed in alphabetical order in Table 1.

Table 1. Organisms detected at levels greater than 10,000 cells·L^{-1}.

1999
Chaetoceros debilis
*Chaetoceros socialis**
Chaetoceros spp.
Dactyliosolen fragilissimus
Ditylum brightwellii
*Eucampia zodiacus**
Guinardia delicatula
*Leptocylindrus danicus**
Mesodinium rubrum
Pseudo-nitzschia delicatissima group
Skeletonema costatum
Thalassiosira gravida
Thalassiosira spp.
2000
Armoured dinoflagellate
Ceratium lineatum
*Cerataulina pelagica**
*Chaetoceros socialis**
Chaetoceros spp.
Dactyliosolen fragilissimus
Detonula confervacea
*Dictyocha speculum**
Ditylum brightwellii
Eucampia zodiacus
Gonyaulax spinifera
*Guinardia delicatula**
Helicostomella sp.
*Heterocapsa triquetra**
Leptocylindrus danicus
Leptocylindrus minimus
*Mesodinium rubrum**
Pseudo-nitzschia delicatissima group
Pseudo-nitzschia seriata group
Scrippsiella trochoidea
*Skeletonema costatum**
Thalassionema nitzschoides
Thalassiosira spp.
Tintinnids
Unarmoured dinoflagellate

* levels greater than 100,000 cells·L^{-1}

Dominant species during the 2 yr were: *Chaetoceros socialis*, *Guinardia delicatula*, *Ditylum brightwellii*, *Eucampia zodiacus*, *Leptocylindrus danicus*, *Pseudo-nitzschia delicatissima* group, *Skeletonema costatum*, and *Mesodinium rubrum*. The three species with concentrations greater than 100,000 cells·L^{-1} in 1999 were *C. socialis* (3.40 x 10^5), *E. zodiacus* (1.14 x 10^5) and *L. danicus* (2.45 x 10^5). In 2000, there were seven species observed at concentrations greater that 100,000 cells·L^{-1}: *C. socialis* (2.06 x 10^5), *C. pelagica* (1.15 x 10^5), *Dictyocha speculum* (1.12 x 10^5) *G. delicatula* (1.17 x 10^5), *Heterocapsa triquetra* (1.64 x 10^5) *S. costatum* (1.95 x 10^5) and *M. rubrum* (1.04 x 10^5).

Interestingly, no dinoflagellates were observed at concentrations greater than 10,000 cells•L^{-1} during 1999. In 2000, there were four different dinoflagellate species (*Ceratium lineateum*, *Gonyaulax spinifera*, *Heterocapsa triquetra*, and *Scrippsiella trochoidea*) observed at levels greater than 10,000 cells·L^{-1}, as well as unidentified armoured and unarmoured dinoflagellates. *A. fundyense*, a dinoflagellate that is responsible for producing paralytic shellfish toxins in the Bay of Fundy, is observed annually, with the intensity of the bloom varying greatly from year to year. During most years, blooms are initiated in late May to early June, with highest numbers observed in mid-July. *A. fundyense* was observed at concentrations greater than 10,000 cells·L^{-1} during most of the 9 yr from 1988-96 but during 1997 and 1998, the highest concentrations were less than 10,000 cells•L^{-1}. These concentrations persisted through 1999 and 2000, with the highest concentrations observed in 1999 being 3.2 x 10^3 on July 27 at Deadmans Harbour (Fig. 2) and 2.5 x 10^3 in 2000 on May 23 in Passamaquoddy Bay. During 2000, the highest values of *A. fundyense* from Deadmans Harbour and the Wolves Islands were observed on June 26 with 1.52 x 10^3 and 1.84 x 10^3 cells·L^{-1}, respectively. This is several weeks earlier than the maximum cell density observed during most years. Figure 3 shows concentrations of *A. fundyense* from all four locations since 1988. From 1995-2000,

the maximum concentrations during the bloom decreased.

Additional samples for phytoplankton enumeration were collected during the late summer of 1999 when fish farmers in mid and northern Passamaquoddy Bay observed abnormalities with fish behaviour. *C. socialis* was the dominant organism in the area from Aug. 24 through Oct. 10 and represented up to 93% of the total algal population on Sept. 7. The highest concentration (3.4 x 10^5) was observed at Brandy Cove on Aug. 24. The *C. socialis* bloom was initially overlapped by *L. danicus* during late August, and later in September it overlapped and was followed by high concentrations of *E. zodiacus*

Most of the high density counts of *M. rubrum* for both 1999 and 2000 were located within inner Passamaquoddy Bay. These numbers are not reported within this manuscript as that area was not part of this study.

There were new species observed during 1999-2000. In 1999, the three new species to the areas included *Eucampia groenlandica*, *Pleurosigma formosum*, and *Synedra* sp. The 10 new species observed in 2000 included *Amphidinium* cf. *carterae*, *Amphidinium* cf. *sphenoides*, *Gyrodinium* cf. *spirale*, *Chaetoceros radicans*, *Coscinodiscus wailesii*, *Detonula confervacea*, *Tabellaria* spp., *Thalassiothrix* sp., *Litostomatea* sp., and *Polyasterias problematica*.

Although there are a number of *Pseudo-nitzschia* species in the Bay of Fundy (Kaczmarska et al. 2005), the *Pseudo-nitzschia* species have been grouped into two groups because of difficulty in differientiating with the light microscope. The *P. delicatissima* group refers to a number of different species that are difficult to differentiate without the use of an electron microscope because of their small size in width (1.5-2.0 µm). They include *P. pseudodelicatissima* and *P. delicatissima*. The *P. seriata* group includes *P. multiseries*, *P. fraudulenta*, *P. subpacifica* and *P. pungens*.

Table 2 shows the number of species observed on each sample day during the 2-yr period, 1999-2000. Highest numbers of organisms observed in any one sample day during the years 1993-2000 were: 62 (1993), 66 (1994), 65 (1995), 64 (1996), 68 (1997), 72 (1998), 76 (1999) and 90 (2000). During 1999 and 2000, there were a number of days that more than 70 species were observed in a given sample and in 2000, there were 90 species detected on Aug. 28. This trend contributed to the degree of difficulty in analyzing samples and increased analysis time per sample.

SALINITY

Salinity results are in Appendix 2. Lowest values during the 2 yr were measured at Station #17 (21.19 psu) on Apr. 11, 2000. Highest salinity values were measured at #16, the Wolves with 33.39 psu at 50 m on Nov. 9, 1999.

TEMPERATURE

Temperature values measured during 1999-2000 are in Appendix 2. Surface water temperature was highest in the 2 yr at station 25 or mid-Passamaquoddy Bay (17°C) on Sept. 14, 1999 and lowest (1.0°C) at station 17 or Brandy Cove on Feb. 9, 1999.

Water temperatures in Passamaquoddy Bay ranged from 1.0 (Feb. 9) to 17.0°C (Sept. 14) in 1999 at Stations #17 and #25, respectively (Appendix 3). For the three other sample sites, the range was from 1.7–15.5°C (Station #15), 1.8-14.8°C (Station #3), and 2.2–14.5 9°C (Station #16). Lowest values for the 1993-96 period were -1.5, -1.0 and -0.2 and the lowest value during 1997-98 was 0.4. Therefore, the low temperatures were comparable with those in 1997-98 and warmer that those measured in 1993-96. The highest temperature in the 1993-96 period was 15.0 at Station #17 on Aug. 4, 1994 and the highest temperature recorded in the 1997-98 sampling was 15.5, also at Station #17. Figure 4 shows temperature results from Brandy Cove and Deadmans Harbour from 1988 through 2000.

NUTRIENTS

Nutrient results are shown in Appendix 2. Nitrate values were between 0.09 (Station #15, Aug. 24, 1999) and 12.08 µM (Station #25, Feb. 14, 2000). Nitrite ranged from 0.053 (Station #25, June 27, 2000) to 0.68 µM (Station #3, Dec. 19, 2000). Ammonia values ranged from 0.00 (Station 16 – 25 m, Oct. 10, 2000) to 8.15 (Station #16 – 0 m, June 15, 1999). Phosphate ranged from 0.29 (Station #25, July 25, 2000) to 1.26 µM (Station #16 – 50 m, Aug. 24, 1999). Silicate values ranged from 0.30 (Station #16 – 0 m, July 31, 2000) to 19.66 µM (Station #17, Ap. 11, 2000). Nitrate levels for Lime Kiln Bay and The Wolves are plotted on Fig. 5. Surface (z = 0 m) ammonia, phosphate, and silicate, values for selected stations from 1999-2000 are shown on Fig. 6-8.

Table 2. Number of species observed on each day of sampling during 1999-2000.

Date (1999)	Number of species	Date (2000)	Number of species
13/01	37	19/01	47
09/02	34	14/02	32
18/03	32	14/03	34
13/04	40	11/04	44
04/05	47	02/05	55
		11/05	41
18/05	51	16/05	60
25/05	51	23/05	63
01/06	64	30/05	67
08/06	71	06/06	69
15/06	81	13/06	66
21/06	65	20/06	72
29/06	70	27/06	76
06/07	60	04/07	60
13/07	53	11/07	47
20/07	51	17/07	54
27/07	68	25/07	62
03/08	74	31/07	69
10/08	68	08/08	70
17/08	74	15/08	71
24/08	70	22/08	83
31/08	64	28/08	90
18/05	76	05/09	79
07/09	74	13/09	78
21/09	72	18/09	84
28/09	68	25/09	78
05/10	60	03/10	76
18/10	54	10/10	74
		24/10	77
09/11	55	14/11	74
14/12	54	19/12	56

DISCUSSION

PHYTOPLANKTON

The majority of phytoplankton and smaller zooplankton occur in the Bay of Fundy without causing adverse effects. Prior to 1988, the species of major concern was *A. fundyense*, which is responsible for unsafe levels of toxins in shellfish, resulting in closure of shellfish harvesting areas at some time during the year – generally during the summer months. Shellfish are monitored for toxins at regular intervals by the Canadian Food Inspection Agency. Records indicate that shellfish in the Bay of Fundy become toxic every year. This is not surprising as the presence of very few cells in a plankton net haul or as few as 20 cells·L^{-1} can result in PSP toxins at a detectable level in shellfish from an adjacent area. Unfortunately, in the early stages of setting up the monitoring program, the wild blue mussel (*Mytilus edulis*) industry was closed to harvesting due to high PSP levels and a need to have a better understanding of toxin depuration and has never reopened. Data from this monitoring program, as well as toxin uptake and depuration studies, indicate that during a good part of the year it would be possible to harvest mussels that would be safe for consumption and below the regulatory limit for harvesting. Certain regions, such as Passamaquoddy Bay, would be potential sites for mussel culture as the numbers of *A. fundyense* tend to be lower than in the areas more exposed to offshore waters and higher concentrations of *A. fundyense* cells.

Fish kills were experienced in the late 1970s as a result of PSP toxins that had gone through the food chain and ultimately killed hundreds of tonnes of herring held captive in herring weirs (White 1977). Also, in the mid-1980s, PSP toxins were detected in mackerel and implicated in whale mortalities (Haya et al. 1990). However, results from the monitoring program indicate that the 1990s and the year 2000 have been years with low concentrations of *A. fundyense*. Results from the monitoring program indicate that numbers since 1987 have been considerably lower than the high concentrations observed in the late 1970s and in 1980, when concentrations as high as 1 million cells·L^{-1} were observed. A number of factors and methods such as environmental data, phytoplankton community structure, and trend analyses are being examined to further understand this pattern.

Red tides caused by the organism *M. rubrum* were observed in northern Passamaquoddy Bay during late August of 1999 and 2000. During the red-water events, brick-red patches of cells were observed drifting through some salmon farms. *M. rubrum* concentrations observed in water samples collected from waters with discolouration exceeded 1 million cells·L^{-1}. During these events, salmon exhibited symptoms of stress associated with low oxygen, resulting from a combination of the red tide, decreased currents and elevated temperatures. Oceanographic processes controlling phytoplankton dynamics in the area indicate that upper Passamaquoddy Bay waters are suitable for high primary production and the generation of red tides as a result of the area being shallow, warm, having low flushing rates and stratification in August (Trites and Garrett 1983; Fred Page, Biological Station, 531 Brandy Cove Road, St. Andrews, NB E5B 2L9, pers. commun.). This phenomenon of water discolouration as a result of high concentrations of *M. rubrum* has been observed in both the presence and absence of aquaculture – for example, red-water sightings prior to 2000 were observed during 1975, '77, '79, '89, '93, '98,'99 and 2000 (White et al. 1977; Jennifer Martin, Biological Station, 531 Brandy Cove Road, St. Andrews, NB E5B 2L9, pers. commun.). Although results from the Brandy Cove monitoring site indicate that *M. rubrum* occurs annually in the region, it was found that it rarely forms dense aggregates in the St. Croix River; therefore, the mid-Passamaquoddy Bay site would be a better location to study northern Passsamaquoddy Bay blooms. As a result, this site was added to the regular sampling program. Although red tides of *M. rubrum* had been observed in this area in previous years, the number of aquaculture operations in the area was minimal; however, numbers of farms increased in 1996-97.

Species that have been observed in the Bay of Fundy that have been known to cause problems elsewhere in Canada or the world include: *Dinophysis* spp. (Fernández et al. 1998), *Prorocentrum* spp. (Lawrence et al. 1998) (diarrhetic shellfish toxins); *C. convolutus*, *C. concavicornis* (Horner et al. 1990, 1997), *Gyrodinium aureolum* (Dahl and Tangen 1990, 1993; Romdhane et al. 1998) and *L. minimus* (Clément and Lembeye 1993; Albright 1993) (salmon mortalities). Although these species are known to occur each year in the Fundy region, there have not been any documented incidents of harmful effects to date.

The *P. delicatissima* group of cells, which includes *P. pseudodelicatissima* and *P. delicatissima*, has been observed at concentrations greater than 10,000 cells L^{-1} during each year of sampling. Further culture and SEM work continues on these strains of *Pseudo-nitzschia* to determine which species occurs at a particular time or, if they co-exist, at what proportions they exist in nature. Kaczmarska et al. (2005) have documented the diversity of the genus in the Bay of Fundy and have characterized seven species (*Pseudo-nitzschia americana*, *Pseudo-nitzschia fraudulenta*, *Pseudo-nitzschia multiseries*, *Pseudo-nitzschia pungens*, and *Pseudo-nitzschia subpacifica*) that are present in the Bay of Fundy.

P. pseudodelicatissima was only observed at densities great enough to produce levels of domoic acid above regulatory levels during 1988 and 1995. During both episodes, the *P. pseudo-delicatissima* from the later August/September blooms (concentrations exceeding 1 million cells·L^{-1} in 1988 and 1995) were associated with domoic acid. production (when shellfish exceeded the regulatory limit for domoic acid). In addition, analyses of large quantities of cells collected in plankton tows from the May/June *P. delicatissima* group blooms did not produce detectable levels of domoic acid. Highest concentrations observed in the 2-yr period of this study were 9.52×10^4 cells·L^{-1} at the surface at the Wolves Islands (station 16) on Aug. 10, 1999 and during 2000, 1.02×10^4 cells·L^{-1} were detected at a depth of 10 m at the same location on Sept. 25.

Unfortunately, we are unable to predict phytoplankton densities from year to year. We are, however, able to provide an early warning to industry and regulatory agencies of the progress of a particular bloom. During the 1999-2000 blooms of *Chaetoceros socialis*, *Mesodinium rubrum*, *Eucampia zodiacus*

and *Skeletonema costatum,* we were able to continue to work cooperatively with the salmon aquaculture industry to study the blooms. In addition, we routinely work with the Canadian Food Inspection Agency and notify them of increased numbers of *A. fundyense* (PSP) and the *Pseudo-nitzschia delicatissima* group of cells (ASP).

It is important to understand that every species is unique and information particular to one species cannot be applied to another – especially when trying to determine mitigation measures. Monitoring indicates wide interannual variation in density of populations and the necessity to monitor, at the very least weekly, to provide an early warning. In addition, as industries expand and new industries are introduced, environmental monitoring is essential.

In the future, should fish pens be located in areas prone to red tides, we recommend monitoring during the period when red tides are common. For the southwest New Brunswick region of the Bay of Fundy, this tends to be in late summer. For areas with little historical data, if water discoloration is observed, monitoring should be initiated. Identification of the causative organism is essential as every species is unique and behavioral patterns can differ according to species and geographic location. As the upper Passamaquoddy Bay is susceptible to red tides, it is recommended that waters be monitored, at minimum, on a weekly basis and authorized personnel notified of water discoloration for research and advice on mitigation techniques. From the results of these observations, phytoplankton identification is an essential component to be measured. Additional knowledge of the physical oceanography of the area would contribute towards better understanding events such as bloom initiation, transport and decay.

NUTRIENTS

In general terms, the nutrient data showed typical seasonal cycles for inshore temperate waters. Nitrate, phosphate and silicate were highest in the winter, were depleted by the spring bloom, and were replenished by vertical mixing that accompanied the breakdown of stratification in the late fall. However, there are some features of these distributions that are specific to the Bay of Fundy, and there are differences between the different monitoring stations.

Maximum winter nitrate concentrations in the surface layer (z = 0 m) exhibited a very small range in the region, from 11.3 µM at Brandy Cove to 12.1 µM at Passamaquoddy Bay. The minimum summer concentrations were also reasonably uniform, varying from 0.09 µM at Deadmans to 0.26 µM at Brandy Cove, but there are some differences in the time periods over which nitrate levels stay very low. Figure 5 compares nitrate levels at Lime Kiln Bay and The Wolves. The lowest values at Lime Kiln Bay never persisted for more than a single sample: these low values may have depended on the stage of the tide at the time of sampling. At The Wolves, very low values persisted for longer periods, especially in the summer of 1999. The other stations exhibited similar summer behaviour to that seen at The Wolves, although the minimum concentrations were slightly higher at Brandy Cove than at The Wolves. Figure 5 also shows interannual differences in these trends: minimum nitrate concentrations were higher and less persistent in the summer of 2000 than the summer of 1999. Figure 5 also shows time series for nitrate concentrations as a function of depth. At Lime Kiln Bay, for which sub-surface data are available only for the latter part of 2000, there is very little difference in concentrations at the different depths; this uniformity of values is due to the intense tidal mixing of this station. At The Wolves, summer concentrations increase with increasing depth, with nitrate concentrations almost always greater than 5 µM at 50 m, showing that stratification is well established at this site further offshore in the summer.

Ammonia concentrations (Fig. 6) are not available for as complete a time series as the other nutrients, but the data available did not show a clear seasonal pattern. In general, surface concentrations were lower at The Wolves and Deadmans Harbour (1-2 µM) than elsewhere, with higher values usually found in Lime Kiln Bay and Brandy Cove (not shown). However, even at the Wolves one level of 8.2 µM was found in June, 1999. Because of the susceptibility of ammonia samples to contamination, the possibility that this is an artifact cannot be ruled out. The rapid fluctuations in ammonia concentrations in Lime Kiln Bay may indicate the importance of local ammonia sources and the stage of the tide in determining the ambient concentrations.

Nitrite concentrations (not shown) were low, and exhibited similar patterns throughout the region. Once again, concentrations were lower in summer than in winter, but the differences were small: typical summer level were ~0.1 µM; typical winter levels ~ 0.25 µM. Higher concentrations (up to 0.67 µM at The Wolves and 0.68 µM at Lime Kiln Bay) were seen at all stations in the fall of 2000 than at any other period during these 2 yr.

The seasonal trends in phosphate (Fig. 7) were similar to those for nitrate. Winter maxima varied from 1.00 µM at Passamaquoddy to 1.20 µM at Lime Kiln Bay; summer minima from 0.29 at Passamaquoddy to 0.43 µM at Brandy Cove. However, summer concentrations of phosphate do not become close to zero as they do for nitrate.

Summer silicate minima (0.30 µM at The Wolves to 1.20 µM at Brandy Cove), like those of nitrate, were also very low, but not as uniform. Winter maxima for silicate varied over a wide range (Fig. 8). Maximum values at Deadmans Harbour, The Wolves and Lime Kiln Bay were 10.8, 11.0 and 11.2 µM, respectively, but reached values of 15.0 and 19.7 µM at Passamaquoddy and Brandy Cove. These higher values may be due to local river inputs. Dalziel et al. (1998) reported very variable silicate river concentrations for local rivers: they measured values as high as 10 µM in the St. Croix and Magaguadavic Rivers, and as high as 39 µM in the Digdeguash River.

ACKNOWLEDGMENTS

We thank Captain Wayne Miner and Danny Loveless of the PANDALUS III and Michelle Ringuette for assisting with the field sampling. Pierre Clement performed the nutrient analyses. Brenda Best formatted and edited the manuscript, Blythe Chang provided the map. Les Burridge and Blythe Chang reviewed the manuscript.

REFERENCES

Albright, L.J., Yang, C.Z., and Johnson, S. 1993. Sub-lethal concentrations of the harmful diatoms, *Chaetoceros concavicornis* and *C. convolutus*, increase mortality rates of penned Pacific salmon. Aquaculture 117: 215-225.

Anderson, D.M. 1989. Toxic algal blooms and red tides: a global perspective, In Red tides. Edited by T. Okaichi, D.M. Anderson, and T. Nemoto. Elsevier, New York. pp. 11-16.

Bray, D.F., Bagu, J.R., and Koegler P. 1993. A comparison of HMDS, Peldri II, and critical point drying methods for SEM of biological specimens. Microsc. Res. Technique 26: 489-495.

Clément, A., and Lembeye, G. 1993. Phytoplankton monitoring program in the fish farming region of South Chile. In Toxic phytoplankton blooms in the sea. Edited by T.J. Smayda and Y. Shimizu. Elsevier, The Netherlands. pp. 223-228.

Dahl, E., and Tangen, K. 1990. *Gyrodinium aureolum* bloom along the Norwegian coast in 1988. In Toxic marine phytoplankton. Edited by E. Granéli, B. Sundström, L. Edler, and D.M. Anderson. Elsevier, New York, New York. pp. 123-127.

Dahl, E., and Tangen, K. 1993. 25 years experience with *Gyrodinium aureolum* in Norwegian waters. In Toxic phytoplankton blooms in the sea. Edited by T.J. Smayda, and Y. Shimizu. Elsevier, The Netherlands. pp. 15-21.

Dalziel, J.A., Yeats, P.A. and Amirault, B.P. 1998. Inorganic chemical analyses of major rivers flowing into the Bay of Fundy, the Scotian Shelf and the Bras d'Or Lakes. Can. Tech. Rep. Fish. Aquat. Sci. 2226: vii + 140 p.

Durbin, E., Teegarden, G., Campbell, R., Cembella, A., Baumgartner, M.F., and Mate, B.R. 2002. North Atlantic Right Whales, *Eubalaena glacialis*, exposed to paralytic shellfish poisoning (PSP) toxins via zooplankton vector, *Calanus finmarchicus*. Harmful Algae 1: 243-251.

Fernández, M.L., Miguez, A., Moroño, A., Cacho, E., Martinez, A., and Blanco, J. 1998. Detoxification of low polarity toxins (DTX3) from mussels *Mytilus galloprovincialis* in Spain. In Harmful algae. Edited by B. Reguera, J. Blanco, M.L. Fernández and T. Wyatt. Xunta de Galicia and Intergovernmental Oceanographic Commission of UNESCO 1998. pp. 449-452.

Gran, H.H., and Braarud, T. 1935. A quantitative study of the phytoplankton in the Bay of Fundy and the Gulf of Maine (including observations on hydrography, chemistry, and turbidity). J. Biol. Board Can. 1: 279-467.

Hallegraeff, G.M.. 1993. A review of harmful algal blooms and their apparent global increase. Phycologia 32: 79-99.

Hasle, G.R., and Fryxell, G.A. 1970. Diatoms: cleaning and mounting for light and electron microscopy. Trans. Am. Microsc. Soc. 89: 469-474.

Haya, K., Martin, J.L., Burridge, L.E., Waiwood, B.A., and Wildish, D.J. 1991. Domoic acid in shellfish and plankton from the Bay of Fundy, New Brunswick, Canada. J. Shell. Res. 10: 113-118.

Haya, K., Martin, J.L., Waiwood, B.A., Burridge, L.E., Hungerford, J.M., and Zitko, V. 1990. Identification of paralytic shellfish toxins in mackerel from southwest Bay of Fundy, Canada. In Toxic marine phytoplankton. Edited by E. Granéli, B. Sundström, L. Edler, and D.M. Anderson. Elsevier, New York, New York. pp. 350-355.

Horner, R.A., Garrison, D.L., and Plumley, F.G. 1997. Harmful algal blooms and red tide problems on the U.S. west coast. Limnol. Oceanogr. 42: 1076-1088.

Horner, R.A., Postel, J.R., and Rensel, J.E. 1990. Noxious phytoplankton blooms in western Washington waters. A review. In Toxic marine phytoplankton. Edited by E. Granéli, B. Sundström, L. Edler, and D.M. Anderson. Elsevier, New York. pp. 171-176.

Kaczmarska, I., Bates, S.S., Ehrman, J.M., and Leger, C. 2000. Fine structure of the gamete, auxospore and initial cell in the pennate diatom *Pseudo-nitzschia multiseries* (Bacillariophyta). Nova Hedwigia 71: 337-357.

Kaczmarska, I., LeGresley, M.M., Martin, J.L., and Ehrman, J. 2005. Diversity of the diatom genus *Pseudo-nitzschia* Peragallo in the Quoddy Region of the Bay of Fundy, Canada. Harmful Algae 4: 1-19.

Lawrence, J.E., Bauder, A.G., Quilliam, M. A., and Cembella, A. D. 1998. *Prorocentrum lima*: a putative link to diarrhetic shellfish poisoning in Nova Scotia, Canada. In Harmful algae. Edited by B. Reguera, J. Blanco, M.L. Fernández, and T. Wyatt. Xunta de Galicia and Intergovernmental Oceanographic Commission of UNESCO 1998. pp. 78-79.

MacKenzie, D. 1988. As the chain of death spreads to whales. New Sci. 117 (1597): 30 (issue 28 January 1988).

Martin, J.L., and White, A.W. 1988. Distribution and abundance of the toxic dinoflagellate *Gonyaulax excavata* in the Bay of Fundy. Can. J. Fish. Aquat. Sci. 45: 1968-1975.

Martin, J.L., LeGresley, M.M., and Richard, D.J.A. 1998. Toxic phytoplankton, PSP and ASP toxicity data during the years 1988-1996 from the southwest Bay of Fundy, eastern Canada. In Harmful algae. Edited by B. Reguera, J. Blanco, M.L. Fernández, and T. Wyatt. Xunta de Galicia and Intergovernmental Oceanographic Commission of UNESCO 1998. pp. 233-234.

Martin, J.L., Haya, K., Burridge, L.E., and Wildish, D.J. 1990. *Nitzschia pseudodelicatissima*: a source of domoic acid in the Bay of Fundy, eastern Canada. Mar. Ecol. Prog. Ser. 67: 177-182.

Martin, J.L., LeGresley, M.M., and Strain, P.M. 2001. Phytoplankton monitoring in the western isles region of the Bay of Fundy during 1997-98. Can. Tech. Rep. Fish. Aquat. Sci. 2349: 85 p.

Martin, J.L., LeGresley, M.M., Strain, P.M., and Clement, P. 1999. Phytoplankton monitoring in the southwest Bay of Fundy during 1993-96. Can. Tech. Rep. Fish. Aquat. Sci. 2265: 132 p.

Martin, J.L., and Richard, D. 1996. Shellfish toxicity from the Bay of Fundy, eastern Canada: 50 years in retrospect. In Harmful Algae. Edited by T. Yasumoto, Y. Oshima, and Y. Fukuyo. Intergovernmental Oceanographic Commission of UNESCO 1996. pp. 3-6.

Martin, J.L., Wildish, D.J., LeGresley, M.M., and Ringuette, M.M. 1995. Phytoplankton monitoring in the southwestern Bay of Fundy during 1990-1992. Can. Manuscri. Rep. Fish. Aquat. Sci. 2277: 154 p.

Prakash, A., Medcof, J.C., and Tennant, A.D. 1971. Paralytic shellfish poisoning in eastern Canada. Bull. Fish. Res. Board Can. 177: 87 p.

Romdhane, M.S., Eilersten, H.C., Yahia, O.K.D., and Yahia, M.N.D. 1998. Toxic dinoflagellate blooms in Tunisian lagoons: causes and consequences for aquaculture. In Harmful algae. Edited by B. Reguera, J. Blanco, M.L. Fernández, and T. Wyatt. Xunta de Galicia and Inter-governmental Oceanographic Commission of UNESCO 1998. pp. 80-83.

Smayda, T.S. 1990. Novel and nuisance phytoplankton blooms in the sea: evidence for a global epidemic. In Toxic marine phytoplankton. Edited by E. Granéli, B. Sundström, L. Edler, and D.M. Anderson. Elsevier, New York, New York. pp. 29-40.

Soumia, A. 1978. Phytoplankton Manual. Paris, IOC-UNESCO. (Monographs on Oceanographic Methodology 4.6).

Strain, P.M., and Clement, P.M. 1996. Nutrient and dissolved oyxgen concentrations in the Letang Inlet, New Brunswick, in the summer of 1994. Can. Data Rep. Fish. Aquat. Sci. 1004: iv + 33 p.

Trites, R.W., and Garrett, C.J. 1983. Physical oceanography of the Quoddy Region. In Marine and coastal systems of the Quoddy Region, New Brunswick. Edited by M.L.H. Thomas. Can. Spec. Publ. Fish. Aquat. Sci. 64: 9-34.

White, A.W. 1977. Dinoflagellate toxins as probable cause of an Atlantic herring (*Clupea harengus harengus* kill, and pteropods as apparent vector. J. Fish. Res. Bd. Can. 34: 2421-2424.

White, A.W. 1980. Recurrence of kills of Atlantic herring (*Clupea harengus harengus*) caused by dinoflagellate toxins transferred through herbivorous zooplankton. Can. J. Fish. Aquat. Sci. 37: 2262-2265.

White, A.W. 1981. Sensitivity of marine fishes to toxins from the red-tide dinoflagellate *Gonyaulax excavata* and implications for fish kills. Mar. Biol. 65: 255-260.

White, A.W., Sheath, R.G., and Hellebust, J.A. 1977. A red tide caused by the marine ciliate *Mesodinium rubrum* in Passamaquoddy Bay, including pigment and ultrastructure studies of the endosymbiont. J. Fish. Res. Board Can. 34: 413-416.

Wildish, D.J., Martin, J.L., Wilson, A.J., and DeCoste, A.M. 1988. Environmental monitoring of the Bay of Fundy salmonid mariculture industry during 1986 and 1987. Can. Tech. Rep. Fish. Aquat. Sci. 1648: 44 p.

Wildish, D.J., Martin, J.L., Wilson, A.J., and Ringuette, M. 1990. Environmental monitoring of the Bay of Fundy salmonid mariculture industry during 1988-89. Can. Tech. Rep. Fish. Aquat. Sci. 1760: 123 p.

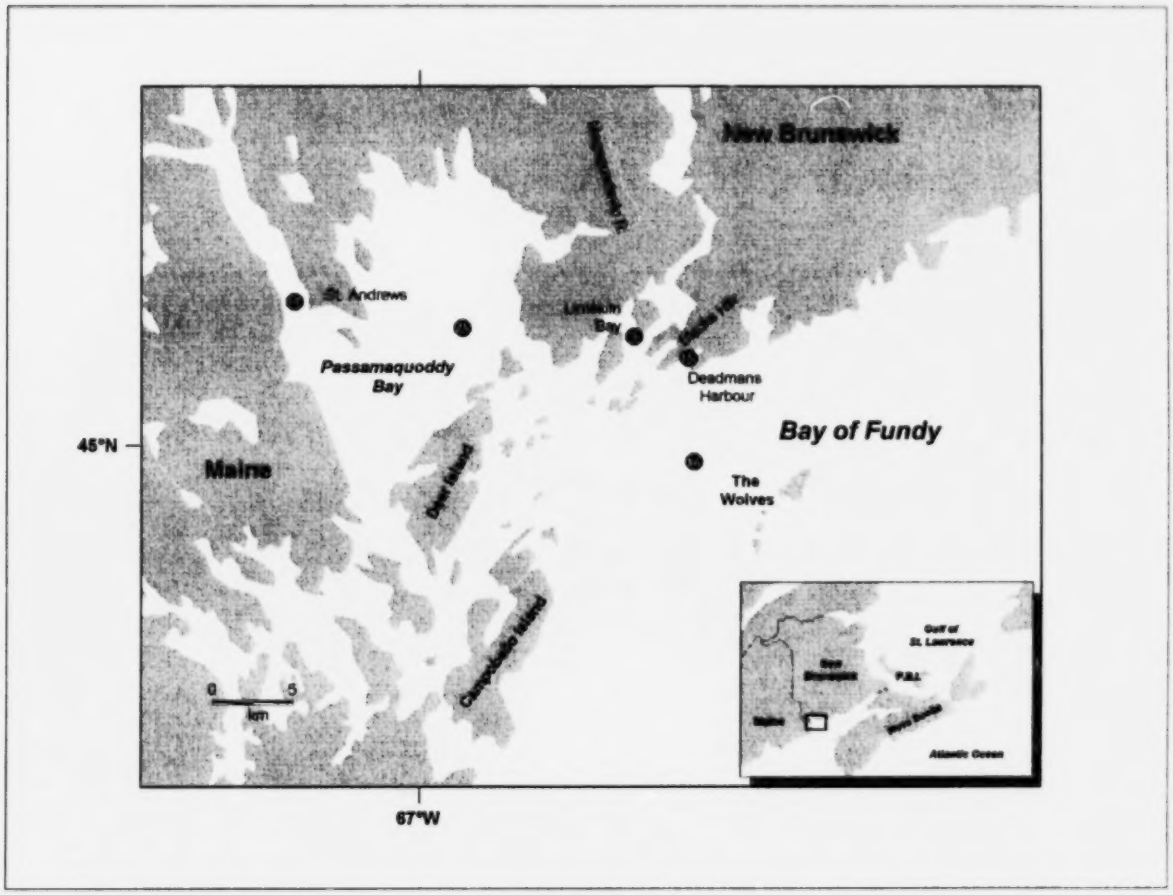

Fig. 1. Map showing sampling stations Brandy Cove (#17), Lime Kiln (#3), Deadmans Harbour (#15), the Wolves Islands (#16) and mid-Passamaquoddy Bay (#25).

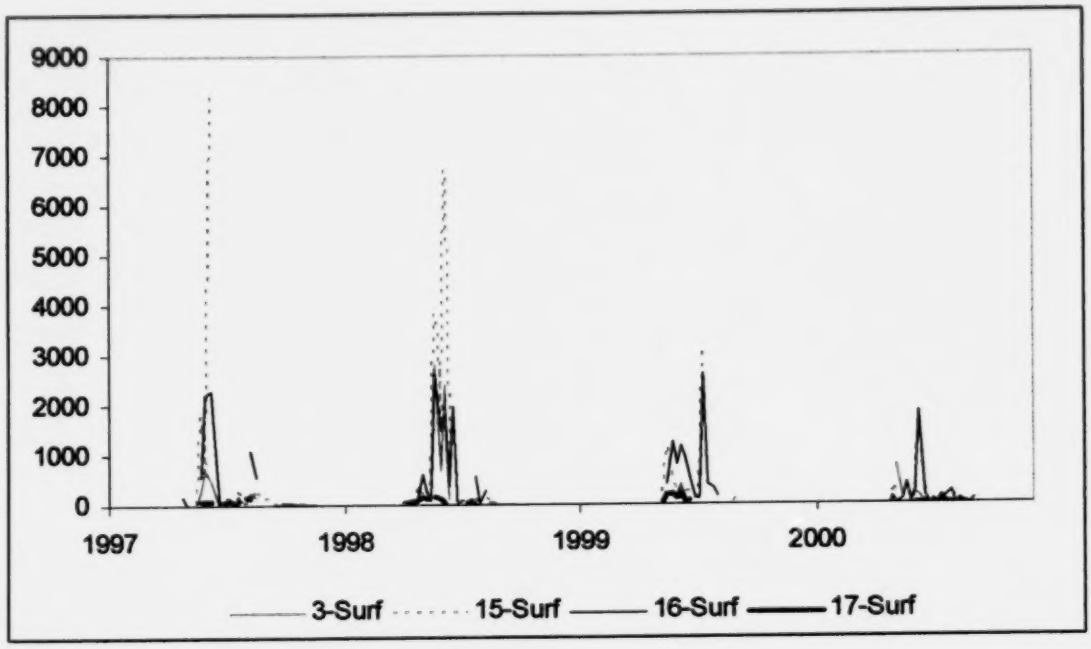

Fig. 2. *A. fundyense* concentrations 1997-2000.

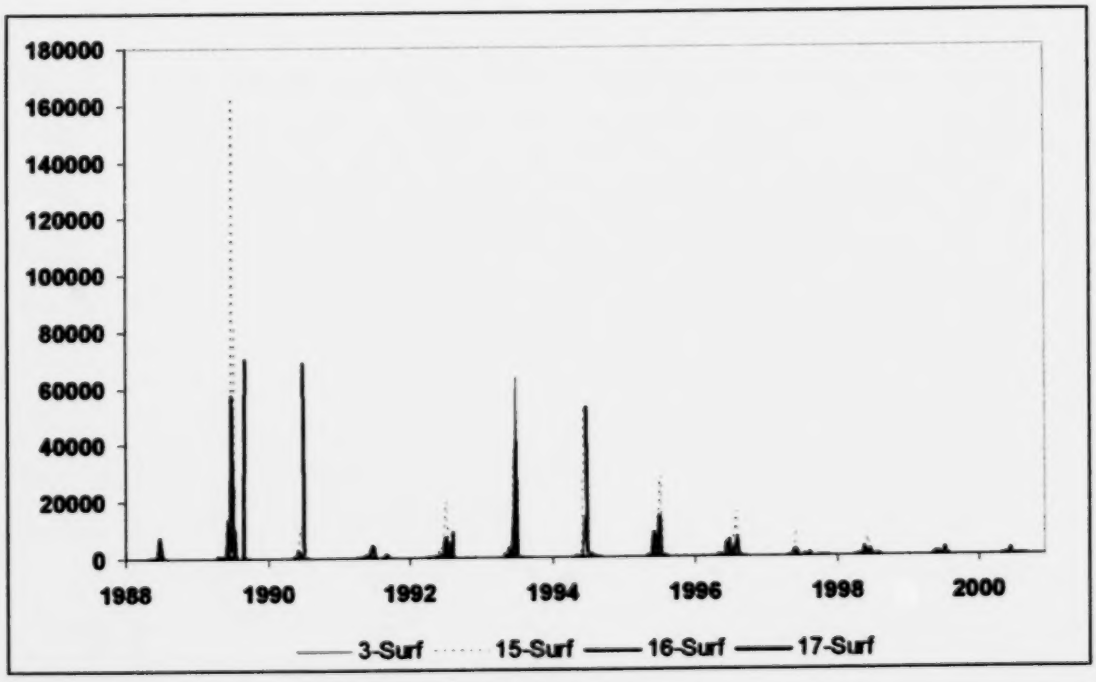

Fig. 3. *A. fundyense* concentrations 1988-2000.

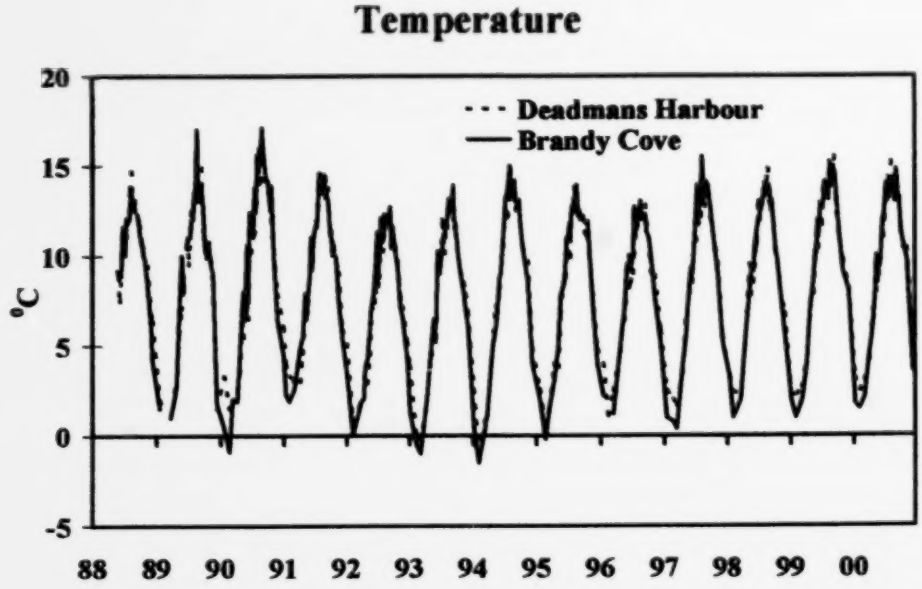

Fig. 4. Surface temperatures from Deadmans Harbour (Station 15) and Brandy Cove (Station 17) (1988-2000).

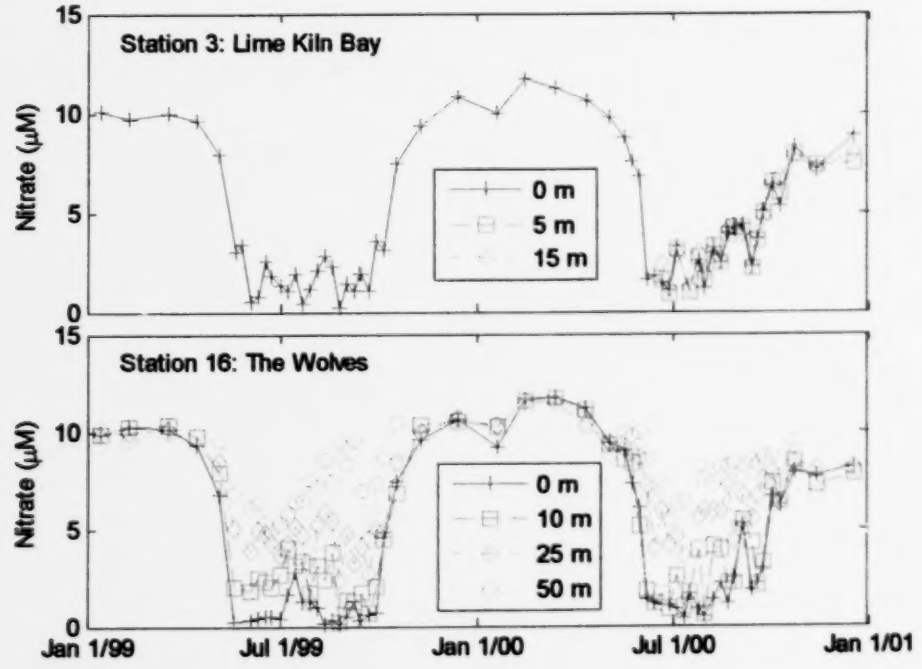

Fig. 5. Nitrate levels at Lime Kiln Bay (station 3) and The Wolves (station 16) for 1999-2000.

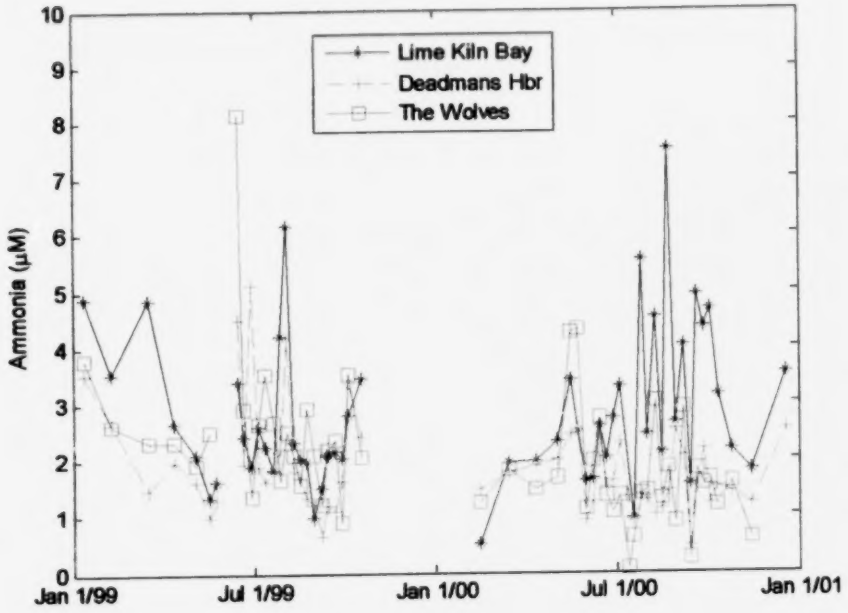

Fig. 6. Surface (z = 0 m) ammonia levels at Lime Kiln Bay (station 3), Deadmans Harbour (station 15) and The Wolves (station 16) during 1999-2000.

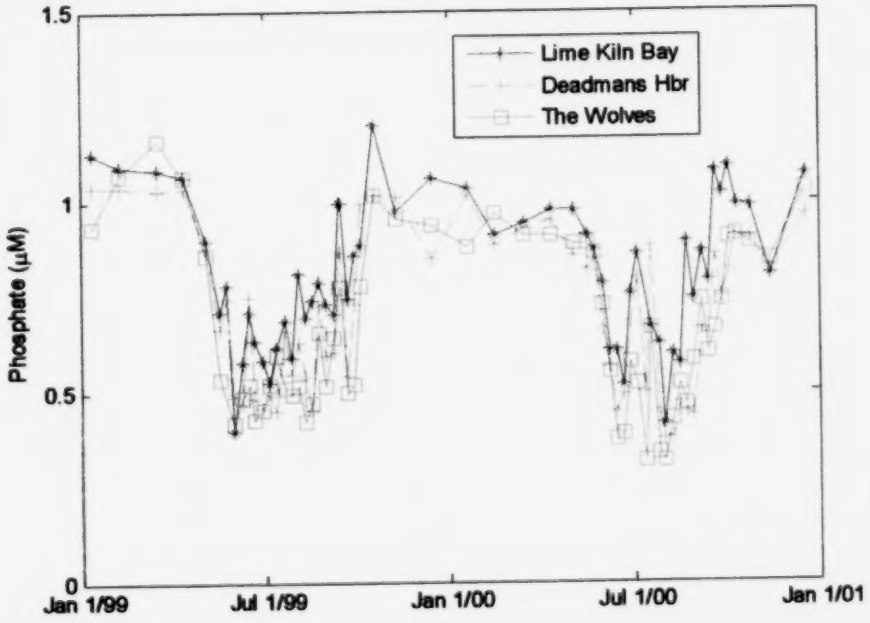

Fig. 7. Surface (z = 0 m) phosphate levels at Lime Kiln Bay (station 3), Deadmans Harbour (station 15) and The Wolves (station 16) during 1999-2000.

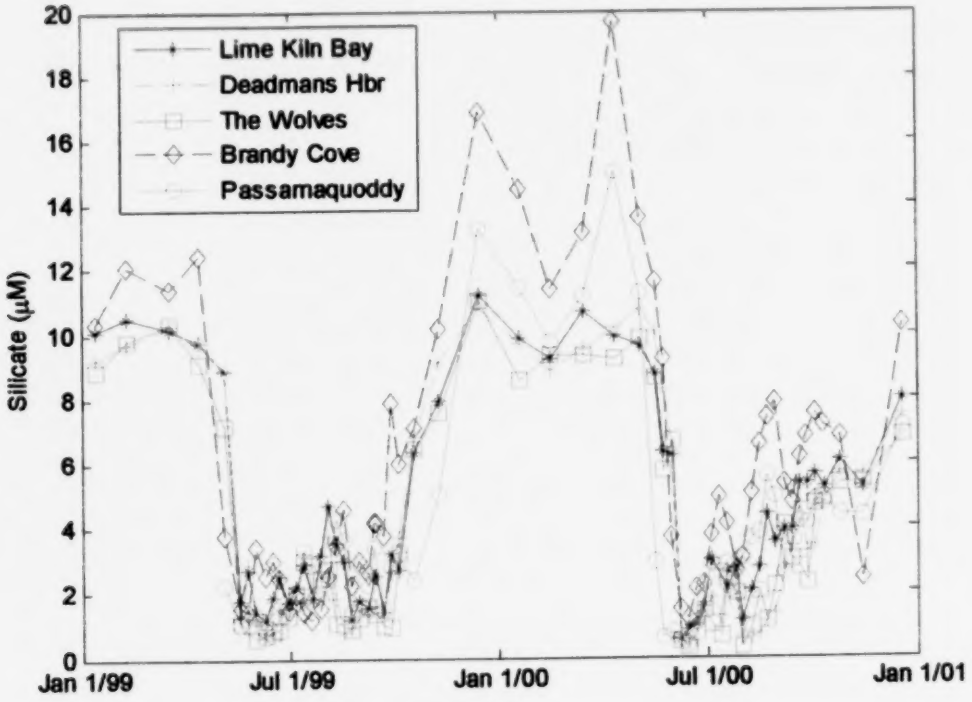

Fig. 8. Surface (z = 0 m) silicate levels at Lime Kiln Bay (station 3), Deadmans Harbour (station 15), The Wolves (station 16), Brandy Cove (station 17) and Passamaquoddy Bay (station 25) during 1999-2000.

Appendix 1. Species observed during 1999 and 2000.

Dinoflagellates

Alexandrium fundyense
Alexandrium fundyense (cyst)
Alexandrium fundyense (duplet)
Alexandrium ostenfeldii
Alexandrium spp.
Amphidinium cf. *carterae*
Amphidinium cf. *sphenoides*
Amylax triacantha
Armoured dinoflagellate
Ceratium arcticum
Ceratium furca
Ceratium fusus
Ceratium horridum
Ceratium kofoidii
Ceratium lineatum
Ceratium longipes
Ceratium macroceros
Ceratium minutum
Ceratium spp.
Ceratium tripos
Dinophysis acuminata
Dinophysis acuta
Dinophysis fortii
Dinophysis norvegica
Dinophysis pulchella
Dinophysis spp.
Dinophysis tripos
Gonyaulax digitale
Gonyaulax sp.
Gonyaulax spinifera
Gyrodinium aureolum
Gyrodinium cf. *spirale*
Gyrodinium spp.
Heterocapsa triquetra
Minuscula bipes
Phalacroma rotundatum
Prorocentrum micans
Prorocentrum minimum
Prorocentrum sp.
Protoperidinium brevipes
Protoperidinium conicum
Protoperidinium denticulatum
Protoperidinium depressum
Protoperidinium ovatum
Protoperidinium spp.
Scrippsiella sp.
Scrippsiella trochoidea
Unarmoured dinoflagellate

Diatoms

Achnanthes sp.
Actinoptychus senarius
Asterionella formosa
Asterionellopsis glacialis
Asterionellopsis kariana
Bacillaria paxillifer
Centrale diatom
Cerataulina pelagica
Chaetoceros borealis
Chaetoceros compressus
Chaetoceros concavicornis
Chaetoceros constrictus
Chaetoceros convolutus
Chaetoceros convolutus var. *trisetosa*
Chaetoceros debilis
Chaetoceros decipiens
Chaetoceros diadema
Chaetoceros didymus
Chaetoceros furcellatus
Chaetoceros ingolfianus
Chaetoceros laciniosus
Chaetoceros lorenzianus
Chaetoceros radicans
Chaetoceros similis
Chaetoceros simplex
Chaetoceros socialis
Chaetoceros spp.
Chaetoceros spp. (phaeoceros)
Chaetoceros subtilis
Chaetoceros teres
Corethron criophilum
Coscinodiscus centralis
Coscinodiscus spp.
Coscinodiscus wailesii
Cylindrotheca closterium
Dactyliosolen fragilissimus

Diatoms (continued)

Detonula confervacea
Detonula pumila
Ditylum brightwellii
Eucampia groenlandica
Eucampia sp.
Eucampia zodiacus
Fragilaria spp.
Grammatophora marina
Guinardia delicatula
Guinardia flaccida
Guinardia striata
Gyrosigma balticum
Gyrosigma fasciola
Gyrosigma tennuissimum
Helicotheca tamesis
Lauderia annulata
Leptocylindrus danicus
Leptocylindrus mediterraneus
Leptocylindrus minimus
Licmophora abbreviata
Melosira ambigua
Melosira monoliformis
Melosira spp.
Navicula sp.
Odontella aurita
Odontella regia
Odontella sinensis
Paralia marina
Pennate diatom
Pleurosigma / Gyrosigma
Pleurosigma angulatum
Pleurosigma angulatum var. *strigosa*
Pleurosigma formosum
Porosira glacialis
Proboscia alata
Pseudo-nitzschia sp.
Pseudo-nitzschia delicatissima group
Pseudo-nitzschia seriata group
Rhabdonema spp.
Rhizosolenia hebetata
Rhizosolenia imbricata
Rhizosolenia setigera
Rhizosolenia spp.
Skeletonema costatum
Stephanopyxis turris
Synedra sp.
Tabellaria spp.
Thalassionema nitzschioides
Thalassiosira auguste-lineata
Thalassiosira baltica
Thalassiosira decipiens
Thalassiosira gravida
Thalassiosira nordenskioeldii
Thalassiosira oestrupii
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix sp.
Triceratium alternans

Others

Brachionus spp.
Ciliate
Copepoda
Dictyocha fibula
Dictyocha speculum
Dinobryon spp.
Ebria tripartita
Eutreptia / Eutreptiella
Favella *sp.*
Flagellate
Helicostomella sp.
Litostomatea
Mesodinium rubrum
Notholca spp.
Parafavella sp.
Pollen
Polyasterias problematica
Ptychocylis sp.
Salpingella sp.
Tintinnids
Tintinnopsis campanula

Appendix 2. Phytoplankton densities as number of cells·L^{-1} in 1999-2000.

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Jan-99								
Armoured dinoflagellate		20					60	
Dinophysis acuminata				20				
Gyrodinium cf. *spirale*		20			20			
Protoperidinium spp.					20		20	
Unarmoured dinoflagellate						20		
Actinoptychus senarius				100	80		160	
Asterionellopsis glacialis							20	
Chaetoceros debilis				40	20			
Chaetoceros decipiens				20				
Chaetoceros socialis	260		40		120	20	80	
Chaetoceros spp.						20		
Corethron criophilum							20	
Coscinodiscus spp.				40	40	200	20	
Cylindrotheca closterium	420	300	920	360	340	380	440	
Ditylum brightwellii	20	40	20	40	40	20	20	
Eucampia zodiacus	460	140	140	260	300	40	100	
Guinardia delicatula	20	20		40	20			
Leptocylindrus minimus	20	20						
Licmophora abbreviata							20	
Navicula sp.	60	100	140	40	40	160	60	
Paralia marina						20	20	
Pennate		20	40		20		20	
Pleurosigma / Gyrosigma		20		20	20			
Pleurosigma angulatum			40	20				
Pleurosigma angulatum var. *strigosa*	20							
Pseudo-nitzschia sp.			20					
Pseudo-nitzschia delicatissima group	360	620	580	500	60	200	420	
Pseudo-nitzschia seriata group		40	20	40	20	40		
Skeletonema costatum		20	40	20		40	20	
Thalassionema nitzschioides						20		
Thalassiosira baltica			40					
Thalassiosira spp.		20	20	100	40	160	60	
Copepoda				40				
Dictyocha speculum				20		20		
Flagellate	20			20				
Mesodinium rubrum		20		80	20	40	1700	
Tintinnids						20	100	
09-Feb-99								
Armoured dinoflagellate					40			
Ceratium fusus				20				
Ceratium tripos					20			
Gyrodinium cf. *spirale*				20	20			
Unarmoured dinoflagellate			40	20	20			
Asterionellopsis glacialis							20	
Chaetoceros debilis			20					
Chaetoceros socialis							140	
Chaetoceros spp.							20	
Corethron criophilum		40			40			
Coscinodiscus spp.					20	20		
Cylindrotheca closterium	20	60	60	380	280	180	120	
Dactyliosolen fragilissimus						20		
Ditylum brightwellii		20		40	20	40	40	
Guinardia delicatula				20		20	20	
Gyrosigma fasciola				20			20	
Leptocylindrus minimus				20		20		
Navicula sp.		40		60	20	40	60	
Paralia marina					40			
Pennate	20				20	60		
Pleurosigma / Gyrosigma		20						
Pleurosigma angulatum var. *strigosa*						160		
Pseudo-nitzschia delicatissima group	340	300	100	240	280	160	20	
Pseudo-nitzschia seriata group				20		20		
Skeletonema costatum		20		60	60		20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
09-Feb-99 (continued)								
Thalassionema nitzschioides							40	
Thalassiosira spp.			40	20		80	40	
Dictyocha speculum			40		20			
Dinobryon spp.							20	
Flagellate		20	20	20	20			
Mesodinium rubrum	20	40	100					
Pollen					40			
Salpingella sp.					20			
Tintinnids			20					
18-Mar-99								
Armoured dinoflagellate					20			
Ceratium arcticum					20	20		
Ceratium tripos				20				
Gyrodinium cf. *spirale*				40	20			
Actinoptychus senarius	20							
Asterionellopsis glacialis				20		20		
Chaetoceros debilis	20			20	20	20	20	
Chaetoceros decipiens	20							
Chaetoceros spp.	60		20	60	20	20	20	
Corethron criophilum			20	40				
Coscinodiscus spp.			20	20	60	20		
Cylindrotheca closterium	140		80	260	180	140	80	
Ditylum brightwellii	40		40	40	20	60		
Fragilaria spp.							20	
Grammatophora marina	20				20			
Leptocylindrus minimus			20			20		
Licmophora abbreviata	20							
Navicula sp.	40		40	20	60	120	120	
Odontella aurita	40							
Pennate	20						20	
Pleurosigma / Gyrosigma				40	40			
Pleurosigma angulatum var. *strigosa*						60		
Pseudo-nitzschia delicatissima group	480		280	280	200	60	120	
Rhizosolenia hebetata						20		
Skeletonema costatum	120		20	80	20	20	20	
Thalassiosira spp.			20	20	20	20	40	
Triceratium alternans	20							
Dinobryon spp.							20	
Flagellate	20							
Mesodinium rubrum	140		240	40			80	
Pollen					20			
Tintinnids						20		
13-Apr-99								
Alexandrium fundyense				20				
Alexandrium ostenfeldii				20				
Armoured dinoflagellate		20						60
Dinophysis spp.			20					
Gyrodinium cf. *spirale*		40		60				
Unarmoured dinoflagellate			20					
Asterionellopsis glacialis		20						
Chaetoceros compressus	20	100	40	40				20
Chaetoceros debilis	200	260	140	60			60	100
Chaetoceros decipiens								40
Chaetoceros ingolfianus		40						80
Chaetoceros similis				20				
Chaetoceros socialis				20				
Chaetoceros spp.	100	220	200	80				120
Corethron criophilum				20				20
Coscinodiscus spp.		20	20				20	20
Cylindrotheca closterium	420	360	620	260			20	320
Ditylum brightwellii	40	40	40	40			40	
Eucampia zodiacus	20			20				

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Apr-99 (continued)								
Gyrosigma fasciola							20	
Leptocylindrus minimus	40	160	20	40				20
Melosira spp.	20							20
Navicula sp.	60						40	20
Pleurosigma / Gyrosigma							20	
Porosira glacialis	60	60						
Proboscia alata				20				
Pseudo-nitzschia delicatissima group	1960	2700	3140	760			260	240
Rhizosolenia hebetata	40							
Skeletonema costatum	240	140	520	120			120	100
Thalassiosira auguste-lineata								20
Thalassiosira decipiens	60		40				20	280
Thalassiosira gravida	20		60					
Thalassiosira nordenskioeldii	20	180	80				20	120
Thalassiosira spp.	80	100	200	260				140
Dictyocha speculum		20						20
Dinobryon spp.							60	
Flagellate	40		20					80
Mesodinium rubrum		260	120				320	440
Salpingella sp.	20	20						
Tintinnids	100			20			240	20
04-May-99								
Alexandrium fundyense		40						
Alexandrium ostenfeldii	40		160					
Armoured dinoflagellate	80		260					160
Ceratium lineatum	20							
Ceratium longipes		20	40					40
Gyrodinium cf. *spirale*	180	200	140				40	40
Protoperidinium ovatum	20		20					
Protoperidinium spp.	20							160
Unarmoured dinoflagellate	260	100						
Asterionellopsis glacialis		40					40	40
Chaetoceros compressus	20	20	80					
Chaetoceros constrictus		20						
Chaetoceros convolutus var. *trisetosa*			20					
Chaetoceros debilis	280	180	680				2160	3800
Chaetoceros decipiens	20	20					40	120
Chaetoceros ingolfianus	20	20	140				400	320
Chaetoceros laciniosus	20	20						
Chaetoceros similis		20					40	
Chaetoceros simplex	40	220					160	80
Chaetoceros spp.	240	160	240				1000	840
Corethron criophilum			20					40
Coscinodiscus spp.	20	20					40	
Cylindrotheca closterium	80	180	160				320	320
Dactyliosolen fragilissimus								40
Ditylum brightwellii	60	40	40				80	120
Eucampia zodiacus			20					
Leptocylindrus danicus		20						240
Leptocylindrus minimus		40	20					280
Melosira spp.		20						
Navicula sp.	40	20	20				120	
Pennate							80	40
Pleurosigma / Gyrosigma								40
Pleurosigma angulatum	20							
Porosira glacialis	40							40
Pseudo-nitzschia delicatissima group	420	700	700				720	1480
Rhizosolenia hebetata	40	20						
Skeletonema costatum	900	600	960				600	1360
Thalassionema nitzschioides	20		20					
Thalassiosira auguste-lineata		20					80	
Thalassiosira gravida			100				200	200
Thalassiosira nordenskioeldii	100	140	400				600	4040

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
04-May-99 (continued)								
Thalassiosira spp.	2500	2280	4260				22760	21240
Copepoda	20							
Dictyocha speculum	40	20	20				40	
Flagellate	20		180					
Mesodinium rubrum	1740	1220	1140				920	1640
Tintinnids	400	140	260					320
18-May-99								
Alexandrium ostenfeldii			40					
Amylax triacantha							40	
Armoured dinoflagellate			160	160	400		80	40
Ceratium longipes								40
Dinophysis acuta			40					
Gyrodinium cf. *spirale*	40	360	280	240			520	360
Protoperidinium spp.	240					40		
Unarmoured dinoflagellate		40					80	
Achnanthes sp.		40						
Actinoptychus senarius						40		
Asterionellopsis glacialis	40	40	40	80				
Chaetoceros compressus	40	40	40	80		40		40
Chaetoceros debilis	4080	880	920	2080	1200	800	2240	2680
Chaetoceros decipiens			120				120	40
Chaetoceros diadema						80	40	
Chaetoceros furcellatus	1400	520	120	720	480	800	560	760
Chaetoceros ingolfianus		40	40	240			40	40
Chaetoceros laciniosus		80	40				160	
Chaetoceros socialis				160		320		
Chaetoceros spp.	1040	520	600	3760	1200	480	920	2720
Corethron criophilum			40					
Coscinodiscus spp.					80			
Cylindrotheca closterium	240	240	200	400	320	240	560	160
Dactyliosolen fragilissimus				160			40	40
Ditylum brightwellii	40	80	160	240		120	80	
Eucampia zodiacus			40					
Leptocylindrus danicus		160					320	
Leptocylindrus minimus	80	120	120			80	240	440
Navicula sp.	40			160		40		
Paralia marina						40		
Pennate	40		40				40	
Pleurosigma / Gyrosigma	40	80						
Pleurosigma angulatum	40	40				80	280	
Porosira glacialis		80	40				40	40
Pseudo-nitzschia delicatissima group	440	2080	1360	720	320	640	1120	1960
Pseudo-nitzschia seriata group					80		80	160
Rhizosolenia hebetata	40							
Rhizosolenia spp.						40		
Skeletonema costatum	80	800	760	1200	320	360		
Stephanopyxis turris								40
Thalassionema nitzschioides		80				80		
Thalassiosira auguste-lineata	200		80			40		
Thalassiosira decipiens	8840	9480	8240				880	840
Thalassiosira gravida	440	640	400	240	160	240	240	480
Thalassiosira nordenskioeldii	2960	2920	2000	960	240	1000	1880	2320
Thalassiosira spp.	15240	1960	1800	61120	30320	29680	2240	1760
Copepoda	40						80	
Dictyocha speculum	40	40	40					80
Flagellate	80	80	320	80				40
Mesodinium rubrum	360	920	1640	80		40	2760	2960
Tintinnids	80	400	800			40	520	80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
25-May-99								
Alexandrium fundyense	80	240					60	
Alexandrium fundyense (duplet)		40					20	
Alexandrium ostenfeldii	40							
Armoured dinoflagellate	160	160					60	120
Ceratium fusus	40							
Ceratium longipes	40							40
Dinophysis spp.		120					20	
Gyrodinium cf. *spirale*	320	480					460	400
Heterocapsa triquetra	80	80						
Protoperidinium denticulatum		40						
Protoperidinium spp.	40	120					20	40
Scrippsiella trochoidea		80					20	
Unarmoured dinoflagellate	640	560					140	120
Chaetoceros compressus	80	40					40	200
Chaetoceros debilis	640	480					2240	2560
Chaetoceros decipiens	40						100	
Chaetoceros furcellatus	80						160	1880
Chaetoceros laciniosus	40						200	440
Chaetoceros spp.	760	320					340	2080
Corethron criophilum		40						
Coscinodiscus spp.							20	40
Cylindrotheca closterium	1240	440					100	600
Dactyliosolen fragilissimus	40						20	120
Ditylum brightwellii	40	120					40	
Eucampia zodiacus	80							120
Grammatophora marina		40						
Leptocylindrus danicus	320	80					360	2600
Leptocylindrus minimus	40						180	160
Navicula sp.	40	40					20	
Odontella aurita								40
Pleurosigma / Gyrosigma	40	40						
Pleurosigma angulatum	40						120	80
Porosira glacialis							20	40
Pseudo-nitzschia delicatissima group	2000	1360						1720
Pseudo-nitzschia seriata group	40							
Rhizosolenia hebetata	120	40						
Skeletonema costatum	280	160						
Thalassiosira auguste-lineata		120					40	40
Thalassiosira baltica		40						
Thalassiosira decipiens	2920	600					580	360
Thalassiosira gravida	280	160					300	160
Thalassiosira nordenskioeldii	1520	600					1400	2080
Thalassiosira oestrupii	40							
Thalassiosira spp.	4680	4800					1100	1320
Brachionus sp.	120							
Copepoda							20	40
Dictyocha speculum	280	80						160
Flagellate	920	1720					40	480
Mesodinium rubrum	5680	5600					2820	3920
Ptychocylis sp.		120						
Tintinnids	2640	2440					960	600
01-Jun-99								
Alexandrium fundyense	160	1160	400	80			200	160
Alexandrium fundyense (duplet)		160					40	
Alexandrium ostenfeldii				80				
Amylax triacantha				80				
Armoured dinoflagellate	400	1000	480		40	40	120	360
Ceratium spp.			80					
Dinophysis acuminata	40							
Dinophysis spp.							40	
Gyrodinium cf. *spirale*	520	560	480	1200	240	20	520	160
Heterocapsa triquetra	160	520	160					
Protoperidinium depressum				80				

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
01-Jun-99 (continued)								
Protoperidinium spp.	40		160				40	40
Scrippsiella trochoidea	80	40						80
Unarmoured dinoflagellate	360	520	960				80	560
Ceratiaulina pelagica	40		80				120	120
Chaetoceros compressus		40		320				
Chaetoceros constrictus								40
Chaetoceros convolutus var. *trisetosa*		80				20		
Chaetoceros debilis	560	560	400	880	600	120	400	720
Chaetoceros decipiens	160	120		240		20		
Chaetoceros furcellatus		40	80	160	240	120	40	
Chaetoceros ingolfianus								40
Chaetoceros laciniosus	360	200	400	80	80			
Chaetoceros simplex								80
Chaetoceros spp.	440	800	1680	3280	960	340	320	1160
Chaetoceros spp. (phaeoceros)				80				
Chaetoceros teres								40
Corethron criophilum		40	80	80	80	20		40
Cylindrotheca closterium	200	200	320	960	440	120	320	80
Dactyliosolen fragilissimus	120							160
Ditylum brightwellii		40				20		
Eucampia zodiacus				160			40	40
Grammatophora marina		40						
Guinardia delicatula	480	40	160		40	20	80	
Gyrosigma fasciola						20		
Leptocylindrus danicus	480	280		880		20	2440	7480
Leptocylindrus minimus		40		80	80		400	80
Licmophora abbreviata		40						
Navicula sp.	80	40		80	80	100	80	
Paralia marina						100		
Pennate				80	40	20		
Pleurosigma / Gyrosigma						20	80	
Pleurosigma angulatum		80		160		80	280	40
Porosira glacialis		120						
Pseudo-nitzschia delicatissima group	520	720	80	1120	720	100	920	160
Pseudo-nitzschia seriata group		200	160	80			80	40
Skeletonema costatum				160	40	60		
Stephanopyxis turris					40			40
Thalassiosira auguste-lineata	120	80	80	400	160		40	
Thalassiosira baltica					40			
Thalassiosira gravida	40	40		400			440	640
Thalassiosira nordenskioeldii	1280	800	3760	2960	2640	420	480	840
Thalassiosira spp.	4240	2280	5520	45720	12560	4100	1240	920
Brachionus sp.		40		80			160	
Copepoda	40	40						
Dictyocha speculum	80	120	320			20		120
Dinobryon spp.								40
Flagellate	80	160	80	160	40		40	520
Helicostomella sp.	40	40						
Mesodinium rubrum	2000	2920	9200	240	80	180	2400	640
Parafavella sp.		40						
Pollen	120	40					40	40
Ptychocylis sp.	40							
Tintinnids	720	1520	1280	320	200	20	800	
08-Jun-99								
Alexandrium fundyense	260	400	1240	160			200	880
Alexandrium fundyense (duplet)	20		200	40				
Amylax triacantha								40
Armoured dinoflagellate	160	240	2720	80		20	560	1400
Ceratium longipes								80
Ceratium macroceros								40
Ceratium spp.		40		40				
Ceratium tripos				40				
Dinophysis acuminata	40		200	40				

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
08-Jun-99 (continued)								
Dinophysis norvegica	40		80					80
Dinophysis pulchella			40					40
Dinophysis spp.								80
Gyrodinium cf. *spirale*	120	400	680	280	260	180	120	160
Heterocapsa triquetra		120	1320	40			80	640
Minuscula bipes			80	40			40	80
Protoperidinium brevipes	40		80	80	20		40	160
Protoperidinium spp.	40	120	160		20			1120
Scrippsiella trochoidea	80		280				40	320
Unarmoured dinoflagellate	80	280	800	40			160	200
Asterionellopsis glacialis		40						
Cerataulina pelagica	80		600	160			2400	2040
Chaetoceros compressus	80	40	80	40	40			
Chaetoceros convolutus var. *trisetosa*		40						
Chaetoceros debilis	2080	920	760	640	240	160	240	
Chaetoceros decipiens	40	40	120		20			
Chaetoceros diadema					60			
Chaetoceros didymus		40						
Chaetoceros furcellatus	40	40	40	280	280	260		
Chaetoceros ingolfianus	40			40	20	20		
Chaetoceros laciniosus	1000	760	1080	600	20			
Chaetoceros socialis				40				
Chaetoceros spp.	1480	960	1160	1320	500	240	400	360
Chaetoceros spp. (phaeoceros)				40				
Chaetoceros teres				80	40			
Corethron criophilum	80		40		20	40		
Coscinodiscus spp.					40	40		
Cylindrotheca closterium	360	480	560	400	180	60	520	40
Dactyliosolen fragilisssimus			240		20	300		40
Ditylum brightwellii		40				20		
Guinardia delicatula	200		240		20		240	80
Leptocylindrus danicus	1360	640	4120	4240	1420		20680	11920
Leptocylindrus minimus	120		80	40		20	520	
Navicula sp.	120			40	80	60		
Paralia marina			40		20			
Pennate				40		20		
Pleurosigma / Gyrosigma	40						80	40
Pleurosigma angulatum			40		20	20		
Pseudo-nitzschia delicatissima group	520	480	1440	360	120		480	160
Pseudo-nitzschia seriata group	200	160	320	160	40	60	200	120
Rhizosolenia imbricata							40	
Skeletonema costatum					20		40	
Stephanopyxis turris	40		160	80	40			
Thalassionema nitzschioides						80		
Thalassiosira auguste-lineata	160		240		60	20		
Thalassiosira baltica				40				
Thalassiosira gravida	200		80	80	40		40	
Thalassiosira nordenskioeldii	1200	2240	3080	4240	2580	480		
Thalassiosira oestrupii		120						
Thalassiosira spp.	880	1560	3080	6840	3460	4340	320	80
Brachionus sp.		40		40			200	
Copepoda		80					40	80
Dictyocha speculum		200	200	40			40	80
Ebria tripartita								40
Flagellate	160		840	80			160	120
Helicostomella sp.		160					200	2320
Mesodinium rubrum	2800	2240	3560	320			3440	7800
Parafavella sp.	40	40	80					40
Pollen			40				840	
Ptychocylis sp.								
Tintinnids	600	440	1200	120	80	60	720	1320

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
15-Jun-99								
Alexandrium fundyense	160	220	800	80			120	720
Alexandrium fundyense (duplet)	40	20	40					
Armoured dinoflagellate	120	240	600	80	60		80	1360
Ceratium fusus	40	20	40					
Ceratium horridum		20						120
Ceratium longipes			40			20		40
Ceratium spp.	40	80						40
Ceratium tripos	80							
Dinophysis acuminata	80	220	800				40	240
Dinophysis acuta		20	40					
Dinophysis norvegica			120					80
Dinophysis spp.		40						40
Gyrodinium cf. *spirale*	80	60	80	160	40		160	200
Heterocapsa triquetra	120	40	320	80				920
Minuscula bipes							160	
Protoperidinium brevipes	40	20						160
Protoperidinium depressum		20	200	40				40
Protoperidinium spp.	120	160	240	80			160	680
Scrippsiella trochoidea	40	20	160				40	280
Unarmoured dinoflagellate		60	120	40			200	200
Asterionellopsis glacialis					40			
Cerataulina pelagica	1880	80	200	280	40	40	8800	2400
Chaetoceros borealis			40					
Chaetoceros compressus				160	40	40		
Chaetoceros constrictus	40	60						80
Chaetoceros convolutus			40					
Chaetoceros convolutus var. *trisetosa*		20						
Chaetoceros debilis	1040	980	1080	2040	160	320	160	40
Chaetoceros decipiens					20	20		
Chaetoceros furcellatus					20	40		
Chaetoceros laciniosus		80	480	160	20		40	
Chaetoceros simplex						40	120	
Chaetoceros socialis				400				
Chaetoceros spp.	880	800	2240	11280	580	340	800	440
Chaetoceros spp. (phaeoceros)		60		40				
Chaetoceros teres	160	20	40	240	20		160	
Corethron criophilum	80	40				20		
Coscinodiscus spp.	40			40	80	120		
Cylindrotheca closterium	560	220	360	840	420	520	1520	120
Dactyliosolen fragilissimus	40			40			40	40
Ditylum brightwellii	160					60		
Eucampia groenlandica							40	
Guinardia delicatula	200	340	200	640		80	520	520
Helicotheca tamesis	40							
Leptocylindrus danicus	9960	1020	1760	4200	1160	560	15960	70140
Leptocylindrus mediterraneus								40
Leptocylindrus minimus	200		80			40	1000	240
Licmophora abbreviata		20					200	
Navicula sp.	80		40			120	120	
Odontella aurita						20		
Odontella regia						80		
Paralia marina					40	80		
Pennate		120		80	80		40	
Pleurosigma / Gyrosigma	40	20				20	120	
Pleurosigma angulatum	240			40	20	100	1200	80
Pleurosigma angulatum var. *strigosa*	40		40		20			40
Porosira glacialis	40							
Proboscia alata	40							40
Pseudo-nitzschia delicatissima group	440	80	560	440	60	80	560	120
Pseudo-nitzschia seriata group	400	180	80	120		40		480
Rhizosolenia hebetata								40
Rhizosolenia imbricata			40					
Skeletonema costatum					40		80	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
15-Jun-99 (continued)								
Stephanopyxis turris	80	20		480	20			120
Thalassionema nitzschioides					80			
Thalassiosira auguste-lineata	40	20		80			40	40
Thalassiosira gravida					20			
Thalassiosira nordenskioeldii	560	500	1160	5240		40		40
Thalassiosira oestrupii							40	40
Thalassiosira spp.	720	340	480	1320	440	540	1640	80
Brachionus sp.			40				40	
Copepoda	40	120	160	80		20	80	80
Dictyocha speculum	80	20	240				240	200
Ebria tripartita								40
Favella sp.								80
Flagellate	200	20	120	120			40	120
Helicostomella sp.	40	40						480
Mesodinium rubrum	1960	3460	4080	320			7800	3480
Parafavella sp.			40					40
Pollen		240	80	40	20	20	160	
Tintinnids	600	420	480	440	80		1280	280
21-Jun-99								
Alexandrium fundyense	400	80	1180	320			240	600
Alexandrium fundyense (duplet)			40					
Armoured dinoflagellate	400	80	280	400	60		360	5080
Ceratium furus			80					
Ceratium horridum			120					
Ceratium lineatum		80						
Ceratium longipes		40	40	160			40	
Ceratium spp.				80	20			
Ceratium tripos	40							
Dinophysis acuminata	80	160	320	160			80	
Dinophysis acuta		40	80	80				
Dinophysis norvegica		40	160	160				
Dinophysis pulchella								80
Gonyaulax digitale								120
Gonyaulax spinifera							40	
Gyrodinium cf. *spirale*	40	80	40				40	
Heterocapsa triquetra	40	40	440	80			240	3560
Mimuscula bipes								80
Prorocentrum minimum			160					
Protoperidinium brevipes			80		20			40
Protoperidinium depressum		40	40	80				
Protoperidinium spp.	80	280	360		20		240	360
Scrippsiella trochoidea	160	40	40	80			40	360
Unarmoured dinoflagellate		40					280	440
Asterionellopsis glacialis						20		
Cerataulina pelagica	4400	2240	680	2560	200	100	5800	520
Chaetoceros constrictus	200	280					40	
Chaetoceros debilis	640	1280	400	1280	280	40		
Chaetoceros furcellatus						20		
Chaetoceros laciniosus		40	40					
Chaetoceros simplex							40	80
Chaetoceros socialis	6640	360		76160		100	80	40
Chaetoceros spp.	360	3040	2080	1840	400	220	1080	160
Corethron criophilum	160	40			20			
Coscinodiscus spp.	40				20	20		
Cylindrotheca closterium	520	320	400	640	920	360	680	360
Dactyliosolen fragilissimus	280	120			40		320	
Guinardia delicatula	3360	2440	1120	800	360	120	3240	2560
Gyrosigma tennuissimum	40							
Leptocylindrus danicus		160	160	880	180	20	960	320
Leptocylindrus minimus	880	80	160		40		1160	120
Licmophora abbreviata							40	
Navicula sp.		40			40	20	40	
Pennate	40				20			

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
21-Jun-99 (continued)								
Pleurosigma / Gyrosigma			80				80	
Pleurosigma angulatum	40						200	
Pseudo-nitzschia delicatissima group		160	40	320			280	40
Pseudo-nitzschia seriata group	200	40			40		120	80
Rhizosolenia imbricata	120				60		40	
Skeletonema costatum								40
Stephanopyxis turris	80	40		640	20		40	
Thalassiosira baltica						20		
Thalassiosira nordenskioeldii			120					
Thalassiosira oestrupii				80	40	20		40
Thalassiosira spp.	40	40			40		1520	
Brachionus sp.					20			
Copepoda		160	40	80		20		40
Dictyocha speculum	280	160	280	160	20		40	240
Ebria tripartita								880
Favella sp.								160
Flagellate	320		160	240			80	1200
Helicostomella sp.	40	240	80				280	880
Mesodinium rubrum	1960	2320	1440	6960			9440	4720
Pollen						20	160	
Tintinnids	80	200	240	1280	120		960	600
29-Jun-99								
Alexandrium fundyense	120	240	920				40	80
Amylax triacantha				20				40
Armoured dinoflagellate	200	400	220	40	100		360	360
Ceratium fusus	40		60					
Ceratium horridum			60					
Ceratium lineatum		40	20					
Ceratium longipes	160	20	40	20	40			120
Ceratium spp.			40					
Ceratium tripos		60	60					
Dinophysis acuminata	80		280	40	20	40	120	1120
Dinophysis acuta	160		40					
Dinophysis norvegica	80		160	20				80
Dinophysis pulchella		100						
Dinophysis spp.				20				40
Gonyaulax spinifera		40						
Gyrodinium cf. *spirale*	40	60	140	180				160
Heterocapsa triquetra		560	720					880
Minuscula bipes								40
Prorocentrum sp.		20						
Protoperidinium brevipes		20						
Protoperidinium depressum	40		20					40
Protoperidinium spp.	160	40	40			20	160	360
Scrippsiella trochoidea		60					40	160
Unarmoured dinoflagellate		40	100				40	400
Asterionellopsis glacialis					80	20		
Cerataulina pelagica	520	260	160	40	160		440	120
Chaetoceros convolutus var. *trisetosa*			20					
Chaetoceros debilis	200		40	100	60			40
Chaetoceros furcellatus						20		
Chaetoceros ingolfianus					20			
Chaetoceros socialis	1000		360	4140	280	60	2560	440
Chaetoceros spp.	520	160	140	220	380	100	240	240
Chaetoceros teres	40		20					
Corethron criophilum			40	40		40		80
Coscinodiscus spp.						60		760
Cylindrotheca closterium	600	200	460	420	1100	120	1360	400
Dactyliosolen fragilissimus		20		120			10040	1720
Ditylum brightwellii				20				
Fragilaria spp.							40	
Guinardia delicatula	7600	1140	1160	500	480	60	51770	24520
Guinardia flaccida								120

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
29-Jun-99 (continued)								
Leptocylindrus danicus		60	20				360	1200
Leptocylindrus minimus	280	140	40				7360	2600
Licmophora abbreviata		20						
Melosira spp.					20			
Navicula sp.	120				120	40	40	
Paralia marina				20				
Pennate			20		40			
Pleurosigma / Gyrosigma								40
Pleurosigma angulatum	560			40	20		640	400
Pleurosigma angulatum var. *strigosa*				20			200	80
Proboscia alata							40	
Pseudo-nitzschia sp.							40	
Pseudo-nitzschia delicatissima group	80		20	120		20		160
Pseudo-nitzschia seriata group							120	200
Rhizosolenia spp.					20			80
Skeletonema costatum					20			
Stephanopyxis turris	40		60				240	40
Thalassionema nitzschioides							40	
Thalassiosira gravida							40	
Thalassiosira oestrupii	40		60					
Thalassiosira spp.					20		120	200
Copepoda		240	80	60	20		40	120
Dictyocha speculum	160	160	400	80			320	160
Flagellate	40	140	140					40
Helicostomella sp.	120	1020	80				80	800
Mesodinium rubrum	4440	1620	5500	200	20	20	5240	18400
Parafavella sp.								40
Pollen	40		140	20			40	
Tintinnids	520	480	420	600	520	20	520	240
06-Jul-99								
Alexandrium fundyense		260	560				80	20
Alexandrium fundyense (duplet)			40					
Armoured dinoflagellate		720	460	40	20		280	20
Ceratium arcticum				20				
Ceratium fusus	40		120	20				
Ceratium lineatum		20						
Ceratium longipes	40	80	140		20			40
Ceratium tripos		20	20					
Dinophysis acuminata		20	200	20		20	40	60
Dinophysis acuta			20					
Dinophysis norvegica			20				120	
Dinophysis pulchella		260	40					
Dinophysis spp.			140				40	
Gonyaulax spinifera			20					60
Gyrodinium cf. *spirale*		40	100	40			320	20
Heterocapsa triquetra		280	220					20
Minuscula bipes			20					
Prorocentrum micans								20
Protoperidinium brevipes						20		
Protoperidinium spp.			60			20	200	80
Scrippsiella trochoidea	80	20	20	20				
Unarmoured dinoflagellate	40	40	140		20		160	80
Asterionellopsis glacialis						20		
Cerataulina pelagica		20		40	40			
Chaetoceros constrictus			20					
Chaetoceros debilis	40			20	20		120	
Chaetoceros furcellatus						20		
Chaetoceros simplex				20	40			
Chaetoceros socialis	65130	2600	4900	3940	200	480	1760	
Chaetoceros spp.		140	140	80	100	140	240	
Corethron criophilum			20		20			
Coscinodiscus spp.					20	20		
Cylindrotheca closterium	160	260	360	920	580	160	320	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
06-Jul-99 (continued)								
Dactyliosolen fragilissimus	40			220	240	20	6800	60
Ditylum brightwellii						20		
Guinardia delicatula	68470	8600	7260	2880	2700	880	80160	21160
Guinardia flaccida	160		80				280	420
Leptocylindrus danicus	40	60	440		180		2000	4920
Leptocylindrus minimus	360	140	140	60	20	20	760	20
Licmophora abbreviata							40	
Navicula sp.	40		40	40	60		40	
Pleurosigma angulatum	80			20	20		120	
Pleurosigma angulatum var. *strigosa*			20		20			
Pseudo-nitzschia delicatissima group		60	20	20	20	20	120	
Pseudo-nitzschia seriata group						40	80	
Rhizosolenia imbricata				20		20		
Rhizosolenia spp.	40							
Stephanopyxis turris	40		60					
Thalassionema nitzschioides					40	60		
Thalassiosira oestrupii		60	100	60				40
Thalassiosira spp.							40	
Copepoda		20	20	20			80	320
Dictyocha speculum	120	240	160	20			200	500
Ebria tripartita		60	100					
Favella sp.		20						
Flagellate		160	80					
Helicostomella sp.		140	60				320	2460
Mesodinium rubrum	9080	1120	3300			20	3520	4460
Pollen		20	60		20			
Tintinnids	240	200	640	320	140	120	240	160
13-Jul-99								
Alexandrium fundyense			120					
Alexandrium fundyense (duplet)			20					
Armoured dinoflagellate		20	60	20			240	40
Ceratium fusus			40					40
Ceratium longipes	80	60	100		20			80
Ceratium tripos			60					
Dinophysis acuminata	160		60	20		20	80	160
Dinophysis acuta			20					40
Dinophysis norvegica			40					
Dinophysis spp.								40
Gonyaulax spinifera			20					
Gyrodinium cf. *spirale*	40		180	60			200	
Heterocapsa triquetra			20					
Protoperidinium spp.	160		120	100			40	40
Unarmoured dinoflagellate			40	20			360	
Asterionellopsis glacialis						20		
Cerataulina pelagica	80		40	20				
Chaetoceros compressus				20			40	
Chaetoceros debilis			20	20			320	
Chaetoceros simplex		20						
Chaetoceros socialis	51770	8600	6680	11460	4760	2720	327320	7560
Chaetoceros spp.	160	60	180	120	160		280	120
Corethron criophilum		60		20				
Coscinodiscus spp.				20	20		80	
Cylindrotheca closterium	400	360	360	300	440	100	560	560
Dactyliosolen fragilissimus	240	180	160	1980	480	120	40	200
Ditylum brightwellii			20	20				
Guinardia delicatula	68470	45090	16480	7500	6640	2820	1640	10480
Guinardia flaccida	160		80	100			360	440
Leptocylindrus danicus	200	220	4400				131930	23280
Leptocylindrus minimus	80	140	160		40		240	200
Licmophora abbreviata								40
Navicula sp.	40	20		60	20	80	80	160
Paralia marina				20				40
Pleurosigma / Gyrosigma	40							40

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Jul-99 (continued)								
Pleurosigma angulatum	360	40	120	80	20		360	360
Pleurosigma angulatum var. *strigosa*				20	20			
Pseudo-nitzschia delicatissima group	40	60	80	20	40	40	40	40
Pseudo-nitzschia seriata group					20		40	
Rhizosolenia hebetata							80	
Rhizosolenia imbricata					60		280	
Skeletonema costatum	40			20				
Thalassiosira gravida							40	
Thalassiosira oestrupii			20		80			80
Thalassiosira spp.			100					
Copepoda	40	20	40	40			80	
Dictyocha speculum	120	60	80				80	200
Flagellate		60	80	20				40
Helicostomella sp.		80	100				160	120
Mesodinium rubrum	2160	1340	1420	100	20	20	240	2920
Notholca sp.								200
Pollen	80	40	20	20			40	
Tintinnids	440	120	300	160	100	60	360	80
20-Jul-99								
Alexandrium fundyense		80	120					80
Armoured dinoflagellate		180	400	80			320	
Ceratium fusus		20	40					
Ceratium longipes		40	80	80			320	240
Dinophysis acuminata		20	40	320				
Dinophysis acuta		20						
Dinophysis norvegica		60	40	160				
Dinophysis pulchella		20						
Gonyaulax spinifera			40					
Gyrodinium cf. *spirale*		60	480	80			320	
Heterocapsa triquetra			80					
Minuscula bipes			80					
Prorocentrum micans		60						
Protoperidinium depressum			40					
Protoperidinium spp.	160		80	160	80		160	
Unarmoured dinoflagellate		20	240				160	
Cerataulina pelagica			40					
Chaetoceros compressus						40		
Chaetoceros convolutus var. *trisetosa*			40					
Chaetoceros debilis	80				40	40	480	
Chaetoceros simplex			80					
Chaetoceros socialis	52640	760	9200	26720	7560	5920	91360	1120
Chaetoceros spp.	160	40	120	800	400	80	320	
Corethron criophilum		20	40	80		40		
Cylindrotheca closterium	240	180	200	1360	800	280	960	
Ditylum brightwellii			40		40	40		
Guinardia delicatula	43420	53560	60120	45200	27720	13920	8640	2880
Guinardia flaccida	160			1360	80		1920	720
Gyrosigma fasciola							160	
Leptocylindrus danicus	113560	76820	36740	1840	14200	7960	188710	2E+05
Leptocylindrus minimus	480	160	80		200	160	160	
Navicula sp.	80	20	40		40			
Paralia marina				80				
Pleurosigma / Gyrosigma	80		80	80				80
Pleurosigma angulatum	80		40					
Pleurosigma angulatum var. *strigosa*				80				
Pseudo-nitzschia delicatissima group	80		120	80	120			
Pseudo-nitzschia seriata group	80						160	
Rhizosolenia imbricata				80				
Rhizosolenia setigera	160							
Rhizosolenia spp.					40		320	
Skeletonema costatum			40		80		160	
Thalassiosira oestrupii			40		120			
Thalassiosira spp.	80		120		40		160	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
20-Jul-99 (continued)								
Copepoda	80	120						
Dictyocha speculum	80	100	120	160	40		480	80
Flagellate	80	200	40					
Helicostomella sp.	80						320	3200
Mesodinium rubrum	5600	620	2200	480	80	40	23520	19040
Pollen	80	20			40		320	
Tintinnids	480	200	320	320	240	80	160	400
27-Jul-99								
Alexandrium fundyense	440	3200	2600	40				360
Alexandrium fundyense (duplet)			40					
Alexandrium ostenfeldii		40						
Amylax triacantha		120		40			40	40
Armoured dinoflagellate	4560	8000	2440	1520	480		360	1800
Ceratium fusus	360	160	40	240	140		40	
Ceratium kofoidii	40	320						
Ceratium lineatum	40	1200	80	80		20		
Ceratium longipes	240	720	80	400			160	240
Ceratium macroceros				40				
Ceratium minutum							40	
Ceratium tripos	240	400	120	80				40
Dinophysis acuminata	1720	4480	360	760	60			80
Dinophysis acuta			40	200	20			40
Dinophysis norvegica	280	360	40	360			40	80
Dinophysis pulchella		80						40
Dinophysis rotundata		80	40					
Dinophysis spp.	40	80	120	80	80			
Gonyaulax digitale								40
Gonyaulax spinifera	120	880	640					360
Gyrodinium cf. *spirale*	1080	3280	1120	520	240		40	240
Heterocapsa triquetra	520	2760	6360	120				160
Minuscula bipes								40
Prorocentrum micans	40	320	120					40
Protoperidinium brevipes		40						
Protoperidinium spp.	200	1320	440	200	160		200	160
Scrippsiella trochoidea	2440	7040	3720	80			40	1040
Unarmoured dinoflagellate	1480	2800	1080	160			40	160
Asterionellopsis glacialis						40		
Cerataulina pelagica	200			40	20			
Chaetoceros convolutus var. *trisetosa*			120					
Chaetoceros furcellatus						20		
Chaetoceros lorenzianus						20		
Chaetoceros socialis	1040				20	100	165330	680
Chaetoceros spp.	80	40	80		40	100	200	80
Corethron criophilum			80	120	20		40	
Cylindrotheca closterium	160		560	160	20	80	160	
Dactyliosolen fragilissimus				5080	10960	5840		
Ditylum brightwellii			80	200			80	
Guinardia delicatula	2880	1280	1400	2160	2840	7800	1040	2280
Guinardia flaccida	40					40	320	200
Leptocylindrus danicus	16160	2680	800				68470	1E+05
Leptocylindrus mediterraneus	40		40	40				
Leptocylindrus minimus	80	40			40	40	120	
Navicula sp.						60	80	40
Paralia marina						60		
Pennate				40	20			
Pleurosigma / Gyrosigma	80		40		240			
Pleurosigma angulatum	440					40	80	80
Pleurosigma angulatum var. *strigosa*				80		40		
Pseudo-nitzschia delicatissima group	40	160	8960	3520	140	500		
Pseudo-nitzschia seriata group	40		200		20		40	
Rhizosolenia hebetata							360	
Rhizosolenia imbricata			120				920	80
Rhizosolenia spp.				40			40	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
27-Jul-99 (continued)								
Skeletonema costatum		40	120			40		
Thalassiosira auguste-lineata				40	20			
Thalassiosira gravida				40				
Thalassiosira oestrupii	160	80	360	200	320	60		80
Thalassiosira spp.	160	200	200	40	40			
Brachionus sp.				80				
Copepoda		80			20		80	
Dictyocha speculum	80	160	240	240	500		40	200
Favella sp.			120					40
Flagellate		160	240	40				
Helicostomella sp.	80	3880	80				1000	360
Mesodinium rubrum	3480	8960	3000	1040	240	120	7040	2360
Tintinnids	1760	1840	400	960	220	20	920	360
03-Aug-99								
Alexandrium fundyense			400	20				
Alexandrium fundyense (cyst)				20				
Alexandrium fundyense (duplet)			40					
Amylax triacantha		80		20				
Armoured dinoflagellate	140	320	7680	360	100		160	440
Ceratium fusus	280	40	40	40	20			200
Ceratium kofoidii	20	80						40
Ceratium lineatum	280	240	120					680
Ceratium longipes	80	160	400	60	20			240
Ceratium spp.		40						40
Ceratium tripos	100	40	200	20				160
Dinophysis acuminata	120	200	200	300		20		
Dinophysis acuta	20				20			
Dinophysis norvegica	100	40		200			40	
Dinophysis pulchella			80					
Dinophysis rotundata	40		200					
Dinophysis spp.	80							
Gonyaulax digitale	120	400	2880					80
Gonyaulax sp.			720					
Gonyaulax spinifera	400	1320	1400					120
Gyrodinium aureolum			80					
Gyrodinium cf. *spirale*	200	120	960	140	20		80	40
Heterocapsa triquetra	20	40	3200					40
Prorocentrum micans	100		200		20			80
Protoperidinium spp.	120	160	160	160			40	
Scrippsiella sp.	20		760	80				1160
Scrippsiella trochoidea	40	280	9160				40	
Unarmoured dinoflagellate	120		80	180				120
Cerataulina pelagica	20			20			40	
Chaetoceros convolutus var. *trisetosa*					20			
Chaetoceros debilis	40		120				80	
Chaetoceros laciniosus			40					
Chaetoceros lorenzianus	20							
Chaetoceros simplex							40	
Chaetoceros socialis	4360	1560	1480	960	160	140	172010	
Chaetoceros spp.	40	120	560	20	180	60		
Corethron criophilum					40		80	
Coscinodiscus spp.	20				20		40	
Cylindrotheca closterium	80	600	640	420	620	60	40	
Dactyliosolen fragilissimus	20			60	480	180	240	40
Ditylum brightwellii					40	20		
Guinardia delicatula	60	80		340	400	420	560	
Guinardia flaccida							120	80
Gyrosigma tennuissimum						20		
Lauderia annulata							80	
Leptocylindrus danicus	140	280	200				3200	600
Leptocylindrus mediterraneus				80				
Leptocylindrus minimus		40		20		20	200	
Licmophora abbreviata		160	40					

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
03-Aug-99 (continued)								
Navicula sp.	20			20		20	40	
Paralia marina	20					60		
Pleurosigma / Gyrosigma	40	40	120			20	40	
Pleurosigma angulatum	80	80		60		20		40
Pleurosigma angulatum var. *strigosa*				140	40			
Pseudo-nitzschia sp.	20							
Pseudo-nitzschia delicatissima group	120	1160	10320	1820	2960	1780	40	
Pseudo-nitzschia seriata group		280	1040	120				
Rhizosolenia hebetata							160	
Rhizosolenia imbricata	20						840	160
Rhizosolenia spp.		40	80		20			
Skeletonema costatum			680	60	280	120		
Thalassionema nitzschioides						20		
Thalassiosira auguste-lineata			120					
Thalassiosira oestrupii	140	840	3640	820	260	100		80
Thalassiosira spp.			120		100		40	
Copepoda	120	80				20	40	40
Dictyocha speculum	160	80	720	320	20		200	1640
Ebria tripartita								40
Favella sp.	20							
Flagellate							40	
Helicostomella sp.	100	40					80	1840
Mesodinium rubrum	1860	560	1240	240			1880	12280
Pollen					20			
Tintinnids	360	320	120	440	180	80	120	
10-Aug-99								
Alexandrium fundyense	160		320		80			40
Armoured dinoflagellate	960	800	3840	2080		20		760
Ceratium fusus	800	320	1120	640	80	20		
Ceratium kofoidii				160				
Ceratium lineatum	640	640	960					160
Ceratium longipes	480	160		320				40
Ceratium spp.					80		80	
Ceratium tripos	160		320	160	160	20		
Dinophysis acuminata			480		80			
Dinophysis norvegica			160	320				
Dinophysis pulchella			160					
Gonyaulax digitale			960					1360
Gonyaulax spinifera	320	640	2880					600
Gyrodinium cf. *spirale*	160	320	800	480	80			80
Heterocapsa triquetra		160	320	160				240
Prorocentrum micans		160	160	160				440
Protoperidinium spp.	320	480	480	480			160	40
Scrippsiella sp.		160	1600	320				400
Scrippsiella trochoidea	480	640	3680	1120			80	120
Unarmoured dinoflagellate		480	800		80			
Asterionellopsis glacialis		160	320					
Cerataulina pelagica	320			640	160		480	
Chaetoceros compressus		480	160	640				
Chaetoceros debilis	2240	320	640	960				
Chaetoceros decipiens		160						
Chaetoceros didymus			160	160				
Chaetoceros ingolfianus	160		320					
Chaetoceros lorenzianus	1440	800	960	640	80	20	160	
Chaetoceros socialis	112640	46080	69600	63200	17280	1320	62080	1960
Chaetoceros spp.	13440	4800	12320	7680	960	420	160	40
Corethron criophilum	160		320	960	160	80		40
Coscinodiscus spp.		160				40		
Cylindrotheca closterium	640	480	640	160	720	100	160	
Dactyliosolen fragilissimus	640	2240	1280	2400	400	240	560	360
Ditylum brightwellii	2240	800	2400	480	80	40		
Guinardia delicatula	800	1600	1920	320	400	160	800	40
Guinardia flaccida								80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
10-Aug-99 (continued)								
Lauderia annulata				160	80		80	
Leptocylindrus danicus		160	320					23680
Leptocylindrus mediterraneus		160						
Leptocylindrus minimus	1120	2080		160		80	320	200
Paralia marina						20		
Pennate				480			80	
Pleurosigma / Gyrosigma	640	320	800					
Pleurosigma angulatum	320			160				
Pleurosigma angulatum var. *strigosa*				640	240	140		
Pseudo-nitzschia sp.						20	80	
Pseudo-nitzschia delicatissima group	37440	20960	95184	81830	13920	7360	480	640
Pseudo-nitzschia seriata group	7360	8480	4640	3520	560	80		
Rhizosolenia hebetata				160	80			
Rhizosolenia imbricata								160
Rhizosolenia setigera	320					20		
Rhizosolenia spp.	160					80	3760	
Skeletonema costatum	4160	1120	5600	4640	2800	780	400	
Stephanopyxis turris			320					
Thalassionema nitzschioides			320	640	480			
Thalassiosira auguste-lineata	320		160	160				
Thalassiosira baltica	160							
Thalassiosira gravida		160			80			
Thalassiosira oestrupii	3360	1600	3840	4320	1120	40		320
Thalassiosira spp.	960		2080	1760	160	40	80	
Copepoda	320		160	160			80	40
Dictyocha speculum	480	320	160	800	320			400
Flagellate							80	
Helicostomella sp.			160	480	80			40
Mesodinium rubrum	4320	6080	2080	480		20	4320	1960
Pollen						20	80	
Tintinnids	640	640	1920	320	240	20	1280	840
17-Aug-99								
Alexandrium fundyense			160					
Amylax triacantha		160						
Armoured dinoflagellate	1600	960	1280				320	520
Ceratium fusus	160	480	160					40
Ceratium lineatum	1280	160	800				160	400
Ceratium longipes	320		160	160		40		120
Ceratium tripos			320	80				280
Dinophysis acuminata						80		40
Dinophysis norvegica	160							
Dinophysis pulchella								80
Dinophysis rotundata								40
Gonyaulax digitale	320	1280	640				160	240
Gonyaulax spinifera							480	80
Gyrodinium cf. *spirale*	320	320	160	160				
Heterocapsa triquetra			160					
Prorocentrum micans		160	160				160	280
Protoperidinium spp.			320					240
Scrippsiella sp.		160						
Scrippsiella trochoidea	320	480	2240				320	600
Unarmoured dinoflagellate								40
Actinoptychus senarius					160			80
Asterionellopsis glacialis	320	480	1920	880	760	280		
Cerataulina pelagica			160	80			480	
Chaetoceros compressus		640	640	160	200	240		
Chaetoceros constrictus					40			
Chaetoceros convolutus var. *trisetosa*		160						
Chaetoceros debilis	1280	3840	5120	3520	480	320	160	
Chaetoceros decipiens								40
Chaetoceros ingolfianus	160	320		80				
Chaetoceros laciniosus		640						
Chaetoceros lorenzianus	160	800	160	720	240	360		80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
17-Aug-99 (continued)								
Chaetoceros simplex						40		
Chaetoceros socialis	77440	130240	106880	111040	7960	7520	79360	2080
Chaetoceros spp.	800	4800	4000	5840	2240	880	160	240
Chaetoceros subtilis						40		
Corethron criophilum		160	160	240	200		160	40
Coscinodiscus spp.					80	40		
Cylindrotheca closterium	480	160	960	320	400	120	160	40
Dactyliosolen fragilissimus	3040	6080	5920	2240	1080	680	800	3680
Ditylum brightwellii	1280	2080	4160	3600	600	160	160	80
Eucampia zodiacus							160	
Guinardia delicatula	640	480	1920	480	600	280	800	400
Guinardia flaccida			160	80			160	200
Lauderia annulata				160				
Leptocylindrus danicus	320		320					120
Leptocylindrus mediterraneus	160							
Leptocylindrus minimus	160	480	1760	1040	120	200	480	
Navicula sp.					40	40		
Pennate		160		400		40		
Pleurosigma / Gyrosigma		160					160	
Pleurosigma angulatum	160			80				80
Pleurosigma angulatum var. *strigosa*				320	200	240		
Proboscia alata						40		
Pseudo-nitzschia sp.				80			160	
Pseudo-nitzschia delicatissima group	480	160	320	400	2640	1080	160	
Pseudo-nitzschia seriata group		160	640	320	320	240		80
Rhizosolenia imbricata				80	80	80	5120	280
Rhizosolenia setigera				80				
Rhizosolenia spp.			160					
Skeletonema costatum	320	160	3360	2080	280	1000	160	
Stephanopyxis turris				80	40			
Thalassionema nitzschioides		480		480	240	160		
Thalassiosira auguste-lineata				160	80			
Thalassiosira gravida			160					
Thalassiosira oestrupii		1440	960	1520	720	680	160	200
Thalassiosira spp.		320	1120	1600	360	320		
Triceratium alternans					40			
Copepoda	320	320	160	80		40		80
Dictyocha speculum	320		480		40			440
Favella sp.		320						
Helicostomella sp.	160	2720	320					800
Mesodinium rubrum	5920	1920	960		40		16800	71810
Pollen							160	
Tintinnids	640		480	320	160		640	120
24-Aug-99								
Alexandrium fundyense				160				
Armoured dinoflagellate	480	320	280	160		20		640
Ceratium fusus			40	240	80			
Ceratium kofoidii	480	80	120	240				
Ceratium lineatum		160	40	1280	80		80	
Ceratium spp.	320	80						80
Ceratium tripos	800	720	400	80	80			80
Dinophysis acuminata				160				
Dinophysis norvegica			80					
Gonyaulax spinifera								240
Gyrodinium cf. *spirale*	160	560	200	160	80		80	80
Heterocapsa triquetra				80				
Prorocentrum micans		80	240	80				160
Protoperidinium spp.	160		80	320				240
Scrippsiella sp.				80			320	80
Scrippsiella trochoidea	160		40	160	80			320
Unarmoured dinoflagellate	480	320	320	240				
Asterionellopsis glacialis	1600	320	280	1360	2080	40	80	80
Cerataulina pelagica			80	240			1600	160

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
24-Aug-99 (continued)								
Chaetoceros compressus	480	80	80	320		20		
Chaetoceros constrictus			360					240
Chaetoceros debilis	9280	3280	3240	12480	5680	160	160	720
Chaetoceros decipiens	160		280					80
Chaetoceros didymus		80						
Chaetoceros laciniosus		80	480	80	80			240
Chaetoceros lorenzianus	160		40	320				
Chaetoceros simplex							80	
Chaetoceros socialis	59520	8000	8360	31760	18560	80	340680	16160
Chaetoceros spp.	9120	3040	5840	7120	4400	340	640	1040
Chaetoceros subtilis					80			
Corethron criophilum			80	160			80	
Coscinodiscus spp.			80		80			
Cylindrotheca closterium	800		40	240	800	20	1680	80
Dactyliosolen fragilissimus		80	120				12480	8480
Ditylum brightwellii	9920	8000	5360	8640	6240	160	80	160
Eucampia zodiacus	160	80		160	80		160	
Guinardia delicatula	1120		200	960	560	160	2240	880
Guinardia flaccida		80	80	400		60	1200	
Guinardia striata	320							
Lauderia annulata				80			160	
Leptocylindrus danicus	113560	100200	105210	123580	28640	620	8480	10000
Leptocylindrus minimus	320	80	40		80	60	400	80
Navicula sp.						20		80
Pennate							160	
Pleurosigma / Gyrosigma			40	80	80	100		
Pleurosigma angulatum	160							
Pleurosigma angulatum var. *strigosa*				160				
Proboscia alata			40					
Pseudo-nitzschia delicatissima group	160		80	240		300	560	
Pseudo-nitzschia seriata group	640		160	240	320	160		160
Rhizosolenia hebetata						20	160	
Rhizosolenia imbricata							960	400
Rhizosolenia setigera		80		160	160			
Rhizosolenia spp.	160	80		80	320			
Skeletonema costatum	35200	75150	10840	9360	6720	1440	560	1200
Stephanopyxis turris	160				160			80
Thalassionema nitzschioides			80					
Thalassiosira anguste-lineata	320		120					
Thalassiosira gravida	160		120	160	80			160
Thalassiosira oestrupii		80	120	800	240	60		160
Thalassiosira spp.	4640	2000	1320	2480	2640		160	400
Triceratium alternans						20		
Copepoda	160			80				
Dictyocha speculum	160		80				80	160
Favella sp.		160	320	160				800
Flagellate	160						80	
Helicostomella sp.	320		120	160			80	
Mesodinium rubrum	7840	720	1800	320	160		6960	5680
Pollen						20		
Tintinnids	1280	80	320	320	240		560	320
31-Aug-99								
Armoured dinoflagellate	160	160	720	800				240
Ceratium fusus			160					
Ceratium kofoidii		480	640	320			160	
Ceratium lineatum		320	480	480	240	40	320	400
Ceratium longipes						40		
Ceratium spp.		320						
Ceratium tripos	160		320	160			160	
Dinophysis acuminata				160				
Dinophysis fortii								80
Gyrodinium cf. *spirale*		480	1040	480	80			
Prorocentrum micans	160		80	320				80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
31-Aug-99 (continued)								
Protoperidinium spp.	160		240			40		240
Scrippsiella sp.			1280	640				
Scrippsiella trochoidea	320							80
Unarmoured dinoflagellate		160	480	160				
Asterionellopsis glacialis	3520	2080	1280	2080	960	1080		400
Cerataulina pelagica	480		160			40	480	80
Chaetoceros compressus			160	320	160	40		160
Chaetoceros constrictus	640	1920	320					
Chaetoceros convolutus var. *trisetosa*		320						
Chaetoceros debilis	8000	9920	7200	7840	3520	1280	800	800
Chaetoceros decipiens	960	960	800					80
Chaetoceros didymus		480	560	480	80	40		
Chaetoceros ingolfianus	320	320		160				
Chaetoceros laciniosus	160	160	800				160	
Chaetoceros lorenzianus		480		1120	400	40		80
Chaetoceros socialis	106560	61120	34080	50720	10240	320	59040	35680
Chaetoceros spp.	6880	9600	5440	9920	3920	1440	640	800
Corethron criophilum	160	160	320		80	40	320	
Coscinodiscus spp.	160		80		80	40		
Cylindrotheca closterium	1120	640	720	320	560	200	2080	960
Dactyliosolen fragilissimus	10240		480	3040	2320	1280	45440	11040
Ditylum brightwellii	30720	33440	16880	24000	13440	2880	2400	960
Eucampia zodiacus	160	480					320	1760
Guinardia delicatula	960	640	400	640	560	200	2240	1920
Guinardia flaccida	640		80	160			1120	2480
Guinardia striata			80					
Leptocylindrus danicus		2080	1120				1600	8400
Leptocylindrus minimus	800	320				40	1920	160
Odontella regia	160	160						
Paralia marina	160							
Pleurosigma / Gyrosigma						120		
Pleurosigma angulatum								80
Pleurosigma angulatum var. *strigosa*	160						160	
Proboscia alata		320	80					
Pseudo-nitzschia delicatissima group			240		80	200	640	
Pseudo-nitzschia seriata group		320	400	320	160	120	160	160
Rhizosolenia imbricata					80	40	160	240
Rhizosolenia setigera					160			
Rhizosolenia spp.		160	80	640			160	
Skeletonema costatum	1440	5280	4880	9440	6400	4000	5920	640
Stephanopyxis turris			80					
Thalassionema nitzschioides	480	320	80		240	120		80
Thalassiosira auguste-lineata			320					
Thalassiosira baltica					160			
Thalassiosira gravida	1600	2240	720	1600	400		160	80
Thalassiosira oestrupii		320	320	320	320	120		240
Thalassiosira spp.	2400	3200	2480	5440	1680	520	160	240
Dictyocha speculum				160	80		160	320
Flagellate								80
Helicostomella sp.	160	320		320				
Mesodinium rubrum	2880	480	3040	800	640		4320	6080
Pollen						40		
Tintinnids	160	160	1120	160	240		480	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
07-Sep-99								
Armoured dinoflagellate		800	240	480	320			
Ceratium fusus				160	80		160	160
Ceratium kofoidii	160		80	320				1440
Ceratium lineatum	80	880	1360	480				1760
Ceratium spp.			80					160
Ceratium tripos	160	560	240	160	80		160	960
Dinophysis acuminata								160
Dinophysis fortii							160	
Dinophysis norvegica								160
Dinophysis spp.								640
Gyrodinium cf. *spirale*	80		160	1120	240			1600
Heterocapsa triquetra			80					
Minuscula bipes			80					
Prorocentrum micans	80	400	160	160				1280
Prorocentrum minimum			80					
Protoperidinium spp.	560	240	400	320				1280
Scrippsiella sp.	160	720						
Scrippsiella trochoidea		80	240					320
Unarmoured dinoflagellate			160	160	80			
Actinoptychus senarius	80							
Asterionellopsis glacialis	1840	720	720	2080	2960	1200		
Cerataulina pelagica		160					160	
Chaetoceros compressus	1920	480	160	960	560			160
Chaetoceros debilis	3920	1040	4400	5280	2640	880	160	1600
Chaetoceros decipiens	1920		640	320	720	400		320
Chaetoceros didymus	160		800	1120	560	80		
Chaetoceros ingolfianus			80	320	80			
Chaetoceros laciniosus	240		160	160				
Chaetoceros lorenzianus	480	720	1040	4000	1920			
Chaetoceros similis					80			
Chaetoceros simplex							160	
Chaetoceros socialis	167000	6720	6640	26880	20640	400	42400	1E+05
Chaetoceros spp.	9520	6560	3600	14240	7200	720	160	1440
Corethron criophilum	160		240	160				320
Coscinodiscus spp.			160		240	160		
Cylindrotheca closterium	1040	320	240		1040	240	2720	1280
Dactyliosolen fragilissimus		80			640	320	66240	7840
Ditylum brightwellii	20480	8160	13280	31680	28000	3200	1760	3680
Eucampia zodiacus	240		720	1120	880	80	3200	3520
Guinardia delicatula	320	160	80	320	880	480	320	320
Guinardia flaccida	400		240	160	240	160	960	2560
Guinardia striata	80			160	80			160
Lauderia annulata			160	160	80			
Leptocylindrus danicus			160					480
Leptocylindrus mediterraneus	80	80	320		480			
Leptocylindrus minimus	240			160		80	7840	
Licmophora abbreviata		80						
Odontella sinensis			160	160	80			
Paralia marina	80							
Pleurosigma / Gyrosigma				160				
Pleurosigma angulatum	80							
Pleurosigma angulatum var. *strigosa*					160			
Proboscia alata					160			
Pseudo-nitzschia delicatissima group	320		80			80	160	320
Pseudo-nitzschia seriata group	80	560	800	1760	720		800	800
Rhizosolenia setigera			240					160
Rhizosolenia spp.	80	80	80					
Skeletonema costatum		80	560	320	1120	1760	1120	320
Stephanopyxis turris		80		320	160			
Synedra sp.			80					
Thalassionema nitzschioides				160	320	480		
Thalassiosira angustie-lineata	80		720	800	560			
Thalassiosira baltica				160				

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
07-Sep-99 (continued)								
Thalassiosira decipiens			80					
Thalassiosira gravida	880	240	2320	2880	1200	320		
Thalassiosira nordenskioeldii			80					
Thalassiosira oestrupii	80	80		320	160	160		
Thalassiosira spp.	1280	160	1360	3520	2880	400		
Triceratium alternans						80		
Copepoda			80				160	160
Dictyocha speculum			480	320	160			800
Favella sp.		80						
Flagellate		80	80				160	
Helicostomella sp.	160	320						160
Mesodinium rubrum	4160	2560	1920	1280	320		6880	27040
Tintinnids	480	320	240	960	720	240	640	1440
13-Sep-99								
Alexandrium fundyense		40		80				
Armoured dinoflagellate		560	2960	1120	80		80	
Ceratium fusus				80	80			
Ceratium kofoidii			400	720			240	
Ceratium lineatum	320	360	560	1280	160		400	760
Ceratium tripos	320	80	80	160	80			160
Dinophysis acuminata		80	160					40
Dinophysis fortii								320
Dinophysis spp.							80	
Gonyaulax spinifera			80					
Gyrodinium cf. *spirale*	160	160	480	560	160	60	160	240
Heterocapsa triquetra				80				
Prorocentrum micans		240	80		80		80	240
Protoperidinium spp.		40	560		80			160
Scrippsiella sp.			960	640				40
Scrippsiella trochoidea		80	880	160				
Unarmoured dinoflagellate	160	40	560	160	160	20	80	40
Actinoptychus senarius						40		
Asterionellopsis glacialis	480	280	560	320	1360	220		
Cerataulina pelagica				80			80	
Chaetoceros compressus	1440	720	1520	3280	3600	20		40
Chaetoceros constrictus					80			
Chaetoceros debilis	6400	1360	1600	5840	6720	540	80	320
Chaetoceros decipiens		120				60		
Chaetoceros diadema					80			
Chaetoceros didymus				320	400			
Chaetoceros ingolfianus				160	720			
Chaetoceros laciniosus	480	400	720	480	560	20		
Chaetoceros lorenzianus	2240	520	800	960	1280	40	160	200
Chaetoceros similis					80			
Chaetoceros socialis	60160	18000	25280	28480	7840	400	68960	27960
Chaetoceros spp.	7360	4600	6960	10400	6720	660	240	280
Corethron criophilum	160					40	80	40
Coscinodiscus spp.	160	40		160	80	40		
Cylindrotheca closterium	960	80	400	480	640	160	2640	1440
Dactyliosolen fragilissimus		40	80	160		20	560	160
Ditylum brightwellii		40				20	400	120
Eucampia zodiacus	2400	1000	1040	1760	1840	420	8480	7480
Guinardia delicatula	160	40		160	160	140	80	80
Guinardia flaccida	480	280	80		160	100	1120	920
Guinardia striata					160			
Gyrosigma tennuissimum						20		
Lauderia annulata		360	80	160	720			40
Leptocylindrus danicus			480			20		40
Leptocylindrus mediterraneus		360	1040	1200	560	20		40
Leptocylindrus minimus						20	480	160
Navicula sp.		40						
Odontella sinensis	640	80	240	80	400	100	80	
Paralia marina						20		

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Sep-99 (continued)								
Pleurosigma / Gyrosigma						20	80	40
Pleurosigma angulatum								40
Proboscia alata	160							
Pseudo-nitzschia sp.				80	80			40
Pseudo-nitzschia delicatissima group		40	240		80	20	160	
Pseudo-nitzschia seriata group	640	520	400	1120	880	440	560	40
Rhizosolenia setigera	160			80				40
Rhizosolenia spp.								40
Skeletonema costatum	160			240	160	120	320	
Stephanopyxis turris	160		80	400		20	80	40
Thalassionema nitzschioides				160	160	40		
Thalassiosira auguste-lineata	640	440	160	1600	480	200		40
Thalassiosira baltica				160	80	120		
Thalassiosira decipiens		40			720			
Thalassiosira gravida	8960	2920	4560	5360	3680	720	160	320
Thalassiosira nordenskioeldii	160							
Thalassiosira oestrupii					160	40	80	40
Thalassiosira spp.	1920	320	640	880	320	300		80
Triceratium alternans						160		
Copepoda	160				80			
Dictyocha speculum		40	80	80	80			240
Flagellate		40						
Helicostomella sp.	160		160					
Mesodinium rubrum	960	400	3040	320		20	880	1720
Tintinnids		200	800	400			400	120
21-Sep-99								
Alexandrium fundyense		200						
Armoured dinoflagellate	160	240	360	480	40			40
Ceratium fusus					40			
Ceratium kofoidii			280	1600				
Ceratium lineatum	360	1000	1560	1760	80	40	160	600
Ceratium tripos	40	40	120	80			160	80
Dinophysis acuminata				80				400
Dinophysis fortii				160				
Dinophysis spp.			200					40
Gonyaulax digitale			40					
Gonyaulax spinifera		120	40					
Gyrodinium cf. *spirale*	240	480	480	800		200	320	880
Heterocapsa triquetra	40	160	40					
Minuscula bipes		40	40		40			
Prorocentrum micans	120	520	40	160		40		240
Prorocentrum minimum		1080						
Protoperidinium spp.	240	200	160	160	80		160	240
Scrippsiella sp.	240	1320	120	80			320	
Scrippsiella trochoidea				80				40
Unarmoured dinoflagellate	40	840	120		40	40		
Actinoptychus senarius					40	480		
Asterionellopsis glacialis	80				40	360		
Cerataulina pelagica						40		
Chaetoceros compressus	680	1160	600	800	680	400		240
Chaetoceros constrictus	160		120					
Chaetoceros debilis	2520	960	1400	3200	1920	1000	800	600
Chaetoceros decipiens		40						120
Chaetoceros diadema					40			
Chaetoceros didymus	40				40			
Chaetoceros ingolfianus	80			640	240			
Chaetoceros laciniosus	160	200	80	80				
Chaetoceros lorenzianus	400	120	80	320		80	160	120
Chaetoceros socialis	46760	4440	7600	10240	9520	4320	125760	2E+05
Chaetoceros spp.	3520	5520	1360	2560	2480	2080	320	640
Corethron criophilum		120			40			40
Coscinodiscus spp.	80		120		80	120		
Cylindrotheca closterium	280	400	240	80	560	120	2080	280

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
21-Sep-99 (continued)								
Dactyliosolen fragilissimus	200	80						120
Detonula pumila	40							
Ditylum brightwellii	80		200	80	400	80	480	80
Eucampia zodiacus	5720	800	9120	9840	6240	1920	20160	85170
Guinardia delicatula	40	80	80	80	80	40	320	
Guinardia flaccida	80		80			40	1120	200
Guinardia striata	120				40			
Gyrosigma tennuissimum						40		
Lauderia annulata	720	160	520	800	640	200	320	280
Leptocylindrus mediterraneus	200	280	2960	2240	1960	560		160
Leptocylindrus minimus		80				40	480	240
Navicula sp.						40		
Odontella regia	800	40	40					
Odontella sinensis				400	280	880		
Pleurosigma / Gyrosigma			80	80	200	80	160	
Pleurosigma angulatum	40	40		80				
Pleurosigma formosum							160	
Pseudo-nitzschia delicatissima group	80		80	80	80	240	800	
Pseudo-nitzschia seriata group	280	440	640	560	560	400	800	320
Rhizosolenia spp.							160	
Skeletonema costatum		80		80			160	
Stephanopyxis turris	40	120	240	240	280	120		80
Thalassionema nitzschioides	40				200			
Thalassiosira auguste-lineata	600	80	760	800	360	640		
Thalassiosira baltica			40					
Thalassiosira gravida	10720	680	9320	10080	3720	2880	640	1320
Thalassiosira nordenskioeldii	120							
Thalassiosira oestrupii				80				
Thalassiosira spp.	120		80	240	120	320		
Copepoda	160							
Dictyocha speculum		40	280	400	40		160	80
Favella sp.		80						
Flagellate	80		240	320				360
Mesodinium rubrum	6680	2160	1960	640	80		1440	3840
Tintinnids	160	280	280	160	40	40	480	320
28-Sep-99								
Armoured dinoflagellate		40	120	80	80			
Ceratium fusus				40				
Ceratium kofoidii		40		320			160	
Ceratium lineatum	400	960	240	1080	80			520
Ceratium longipes						20		
Ceratium tripos		40		40	80			40
Dinophysis acuminata				80				160
Gonyaulax digitale				40				
Gonyaulax spinifera			40					
Gyrodinium cf. *spirale*	400	160	80	320			160	240
Heterocapsa triquetra		80						
Prorocentrum micans		40	280	200	80		80	40
Protoperidinium ovatum								40
Protoperidinium spp.		40		40				
Scrippsiella sp.	80		480					
Scrippsiella trochoidea			40	40				
Unarmoured dinoflagellate		120	360					
Actinoptychus senarius				80	80	240		
Asterionellopsis glacialis				40		40		
Cerataulina pelagica			240					
Chaetoceros compressus	240	80	400	400	240	20		
Chaetoceros constrictus		40	160					40
Chaetoceros debilis	2080	1320	2080	1040	640	420		200
Chaetoceros decipiens				40				
Chaetoceros didymus	80				160	40		
Chaetoceros ingolfianus			80					
Chaetoceros laciniosus	160		120					

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
28-Sep-99 (continued)								
Chaetoceros lorenzianus	400	600	600	320	240	160		120
Chaetoceros socialis	19440	6480	14080	3720	3040	580	22160	43420
Chaetoceros spp.	720	520	1280	640	1360	800		120
Corethron criophilum				80		20		
Coscinodiscus spp.	160	120		160				80
Cylindrotheca closterium	240	80		120	80	20	880	40
Dactyliosolen fragilissimus			280	160		60	80	
Ditylum brightwellii	560	240	920	560	880	140		160
Eucampia zodiacus	9200	15600	17640	17640	10320	3020	11200	68470
Guinardia delicatula				80			320	
Guinardia flaccida					160			40
Gyrosigma tennuissimum						80		
Lauderia annulata	1040	960	1160	1160	560	220	80	280
Leptocylindrus mediterraneus	240	1080	2040	1640	720	120		1240
Leptocylindrus minimus		40					160	
Navicula sp.								40
Odontella regia	2080	280	360		160	320		360
Odontella sinensis				360	1120	720		
Paralia marina						20		40
Pennate						20		
Pleurosigma / Gyrosigma	160			320	160	40		80
Pleurosigma angulatum	80						80	
Pleurosigma angulatum var. *strigosa*						60		
Pseudo-nitzschia sp.							80	
Pseudo-nitzschia delicatissima group			40		80		320	120
Pseudo-nitzschia seriata group	160	280	480	120	160	220	80	120
Skeletonema costatum						200	320	
Stephanopyxis turris	480	520	960	280	240	120		120
Thalassionema nitzschioides			40					
Thalassiosira auguste-lineata	240	80	200			80		
Thalassiosira baltica					80			
Thalassiosira gravida	6960	4960	6680	4120	4880	1500	560	1440
Thalassiosira oestrupii		40		40				
Thalassiosira spp.	160		40	120	160	80		
Triceratium alternans						40		
Copepoda				80		20		
Dictyocha speculum	80	120	80	240	80			40
Favella sp.					80			
Flagellate		80		80				
Mesodinium rubrum	1200	4240	1040	240			5600	1320
Tintinnids	80	200		40			320	80
05-Oct-99								
Armoured dinoflagellate		80						40
Ceratium fusus								40
Ceratium kofoidii			80	80	20			
Ceratium lineatum	400		360	640	140	20	40	360
Ceratium tripos	80		120		100			40
Dinophysis acuminata							80	240
Dinophysis spp.							40	
Gyrodinium cf. *spirale*		160	160	480	40		200	160
Prorocentrum micans	80	80			60			40
Protoperidinium spp.		80						40
Scrippsiella sp.			40					
Actinoptychus senarius			400	640	300	60		
Asterionellopsis glacialis				160		40		
Chaetoceros compressus		80	40		20			
Chaetoceros debilis	240	320	840	1600	480	640	80	240
Chaetoceros didymus						40		
Chaetoceros laciniosus	80							
Chaetoceros lorenzianus	160	720	400	160	420	360		400
Chaetoceros socialis	7600	8960	8600	5840	1000	740	12680	90180
Chaetoceros spp.	240	240	600	880	580	360	40	80
Chaetoceros spp. (phaeoceros)			40					

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
05-Oct-99 (continued)								
Corethron criophilum			80		20	60		40
Coscinodiscus centralis					20			
Coscinodiscus spp.	160	80	160	720	40			40
Cylindrotheca closterium	240	240	80	160	120	60	120	360
Dactyliosolen fragilissimus					60	20		
Detonula pumila	80		400					
Ditylum brightwellii	320	320	240	320	320	280	40	
Eucampia zodiacus	27200	26240	8880	20240	10760	5080	17640	98530
Guinardia delicatula			40	80	60	20		
Guinardia flaccida	80							40
Guinardia striata			80					
Gyrosigma tennuissimum						20		
Lauderia annulata	1520	1360	1200	1200	1680	460	120	80
Leptocylindrus mediterraneus	80	80		480	120		120	1240
Leptocylindrus minimus				160	20		120	
Licmophora abbreviata							80	
Navicula sp.								40
Odontella regia		80				120		40
Odontella sinensis	80	800		800	440	760	120	40
Paralia marina						20		
Pennate			80			40		
Pleurosigma / Gyrosigma	80	80	40	400	140	20	80	120
Pleurosigma angulatum								40
Pseudo-nitzschia sp.			40					
Pseudo-nitzschia delicatissima group		80		240	80	20	80	40
Pseudo-nitzschia seriata group	240		280	400	140	300	80	40
Skeletonema costatum						40		
Stephanopyxis turris	400	320	240	1680	860	320		120
Thalassionema nitzschioides					20	60		
Thalassiosira auguste-lineata		80				20		
Thalassiosira baltica						20	40	
Thalassiosira gravida	2560	3520	2240	3520	2460	1540	640	2080
Thalassiosira nordenskioeldii	80							
Thalassiosira spp.		80	120	160	40	140	40	
Copepoda			120	160	40			
Dictyocha speculum		160	120	160	20			40
Flagellate			40	80				
Mesodinium rubrum	3680	1040	960	240	20		1200	1120
Tintinnids	240					20	40	40
18-Oct-99								
Armoured dinoflagellate			20		20	20		40
Ceratium fusus	20		20					
Ceratium kofoidii			20					320
Ceratium lineatum	160	400	240	320	200			880
Ceratium minutum				20				
Ceratium spp.			20					
Ceratium tripos		20	20	20	20			40
Dinophysis acuminata			20				40	
Dinophysis fortii				20				200
Gyrodinium cf. *spirale*	20		40	80	20	20	520	560
Heterocapsa triquetra	20	40						
Prorocentrum micans	60	100	20		20	20	160	40
Protoperidinium spp.		20					40	
Unarmoured dinoflagellate		20	40				120	
Actinoptychus senarius	20		20	140	80	40	40	
Asterionellopsis glacialis						20		
Cerataulina pelagica		20						40
Chaetoceros compressus								40
Chaetoceros debilis	100	20					200	440
Chaetoceros lorenzianus	20		20					80
Chaetoceros socialis	340			40	240	300	1040	25000
Chaetoceros spp.					40			40
Corethron criophilum	20		20	60	20	20		

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
18-Oct-99 (continued)								
Coscinodiscus spp.	80	180	60	140	180	100	80	200
Cylindrotheca closterium	260	140	140	200	260	260	80	640
Dactyliosolen fragilissimus				60				
Ditylum brightwellii	20		20			60	160	200
Eucampia zodiacus	10000	520	740	2480	2860	3440	17040	66800
Guinardia delicatula	60	100	40	20	40		80	120
Guinardia flaccida			60				40	160
Guinardia striata		20	20		40		120	80
Lauderia annulata	40				20	20	40	240
Leptocylindrus mediterraneus							40	560
Leptocylindrus minimus		40	40	20		20	40	360
Melosira ambigua				20				
Navicula sp.								40
Odontella sinensis	20				20	180	120	
Paralia marina		20	20			20		
Pennate					20	20		
Pleurosigma / Gyrosigma	80			140	140	120	120	600
Pseudo-nitzschia sp.	60			40				
Pseudo-nitzschia delicatissima group		20	40			20		
Pseudo-nitzschia seriata group		20				20	80	440
Skeletonema costatum		20						
Stephanopyxis turris	80	20	100	80	120	120		640
Thalassiosira gravida		20		40	20	40	520	1640
Thalassiosira spp.	100		20	40		20	200	
Triceratium alternans							40	
Copepoda		40	60					
Dictyocha fibula	20	20	40					
Dictyocha speculum	180	200	300	200	160	20	40	40
Flagellate	40	240					40	
Mesodinium rubrum	1100	600	1740	140		20	3440	1440
Tintinnids	180		200	340	60	40	80	120
09-Nov-99								
Armoured dinoflagellate	40	40						
Ceratium fusus					20			
Ceratium kofoidii					40			
Ceratium lineatum		80		60				
Ceratium spp.	40							
Gyrodinium cf. *spirale*			240	20	60			
Prorocentrum micans	40		80			20		
Protoperidinium spp.	40	40						
Actinoptychus senarius	240	40		80	80	120	20	600
Asterionellopsis glacialis						20		
Chaetoceros debilis	320	40		180	80	80	60	480
Chaetoceros lorenzianus	40			20	20	20		40
Chaetoceros simplex								40
Chaetoceros socialis	4760	1120	560	1520	1580	360	2300	14840
Chaetoceros spp.	80	40	160		40	20		
Chaetoceros spp. (phaeoceros)					40	20		
Corethron criophilum		80	80	20	60	40	40	40
Coscinodiscus spp.	120	80	80	120	20	20	40	
Cylindrotheca closterium	520	320	800	240	300	280	200	400
Dactyliosolen fragilissimus			80	40	120		120	40
Ditylum brightwellii	80	40	80			60	40	
Eucampia zodiacus	21720	15120	30240	9200	10920	4760	10040	1E+05
Grammatophora marina						20		
Guinardia delicatula	1080	160	480	240	80	120	140	1960
Guinardia flaccida	280			80			20	120
Guinardia striata		80		20	40			40
Gyrosigma fasciola	40							
Lauderia annulata				20		20		
Leptocylindrus danicus	40					20		1000
Leptocylindrus minimus	240	40	160	60		20		200
Navicula sp.	120	40		20	80	40	20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
09-Nov-99 (continued)								
Odontella regia		40			20			
Odontella sinensis			80				20	
Paralia marina				20		20	20	40
Pennate						60		120
Pleurosigma / Gyrosigma				80			20	40
Pleurosigma angulatum var. *strigosa*			240		20			
Pseudo-nitzschia sp.		40			20			
Pseudo-nitzschia delicatissima group				20				
Pseudo-nitzschia seriata group	800	80	560	240	180	40	40	1400
Rhizosolenia setigera						20		
Rhizosolenia spp.							20	
Skeletonema costatum	40							40
Stephanopyxis turris	160	200	160	40	160	200	160	160
Thalassionema nitzschioides	40		240			20	20	
Thalassiosira baltica	40	40				20		
Thalassiosira gravida	160	80	240	80	20	20	180	80
Thalassiosira spp.	80	40	160	40	200	200	20	120
Copepoda			80		20			
Dictyocha fibula					20			
Dictyocha speculum		40	160	20	40	20		40
Flagellate	40							
Mesodinium rubrum	160	280	880	20	40		440	840
Salpingella sp.						20		
Tintinnids		80		20		20	20	
14-Dec-99								
Alexandrium ostenfeldii								20
Armoured dinoflagellate								20
Ceratium fusus			40					
Ceratium lineatum					20			
Gyrodinium cf. *spirale*		60						20
Heterocapsa triquetra							20	
Prorocentrum micans				20				
Protoperidinium spp.			20					
Unarmoured dinoflagellate								20
Actinoptychus senarius		40		180		360		80
Asterionella formosa								20
Chaetoceros debilis							40	
Chaetoceros simplex							20	40
Chaetoceros socialis		20	80					20
Chaetoceros spp.								20
Corethron criophilum		20	20				20	80
Coscinodiscus spp.	60	20	20	100	60	120		60
Cylindrotheca closterium	140	100	100	300	40	40	120	120
Dactyliosolen fragilissimus				60		40		
Ditylum brightwellii	60	100	160	240	100	120	20	60
Eucampia sp.								20
Eucampia zodiacus	420		420	340	160	220	260	2300
Guinardia delicatula	40	140		20	20	40	40	80
Guinardia flaccida	40					20	20	
Gyrosigma tennuissimum					20			
Lauderia annulata			20					
Leptocylindrus minimus			20			20		
Licmophora abbreviata	20							
Melosira ambigua		20						
Melosira monoliformis	20							
Melosira spp.								20
Navicula sp.	40		20	20	60	80	40	20
Odontella regia						20		
Odontella sinensis		20		40	20			
Paralia marina				20		20		
Pennate		40			60	20		
Pleurosigma / Gyrosigma						40		
Pseudo-nitzschia delicatissima group							20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
14-Dec-99 (continued)								
Pseudo-nitzschia seriata group					20			
Rhizosolenia imbricata					20			
Rhizosolenia setigera						20	20	20
Skeletonema costatum	20				40	20		
Stephanopyxis turris		60		20			60	60
Thalassionema nitzschioides	20	20	20		120	60		
Thalassiosira baltica			40			20		
Thalassiosira gravida					20			20
Thalassiosira spp.	20	60	20	20		20		20
Triceratium alternans					20			
Copepoda			20					20
Dictyocha fibula							20	
Dictyocha speculum								20
Dinobryon spp.							40	20
Mesodinium rubrum	40	60		20		20	20	20
Tintinnids	20							80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
19-Jan-00								
Alexandrium fundyense	20							
Armoured dinoflagellate	20	20	20					
Ceratium fusus			60					
Ceratium lineatum				20				
Ceratium spp.			20					
Ceratium tripos	20					20		
Gyrodinium cf. *spirale*					20	20	20	
Heterocapsa triquetra							20	
Prorocentrum micans			20	20				
Actinoptychus senarius	120			380		80		
Asterionella formosa								80
Centrale diatom		100	40		40			
Chaetoceros decipiens	20							
Chaetoceros socialis		20						
Chaetoceros spp.	40	20						
Coscinodiscus spp.	20	60	60	60	100	160	40	40
Cylindrotheca closterium		160	140	260	240	200	200	120
Ditylum brightwellii	80	20	40	140	60	80	80	80
Eucampia zodiacus				20	20			
Guinardia delicatula	20			20				
Gyrosigma tenuissimum			20					
Lauderia annulata	20							
Leptocylindrus minimus	20							
Licmophora abbreviata		80						20
Melosira spp.		20	60				20	
Navicula sp.	40	60	60	40	20	80	20	40
Odontella sinensis		20						
Paralia marina	40			60				
Pennate diatom	40	320	60	40	40	20	40	20
Pleurosigma angulatum		20	20	20				
Pleurosigma angulatum var. *strigosa*	20				60			
Pseudo-nitzschia delicatissima group							220	
Rhizosolenia setigera				20				
Rhizosolenia spp.	20							
Skeletonema costatum				40		20	20	
Stephanopyxis turris		20		20		20	20	
Tabellaria spp.							20	
Thalassionema nitzschioides		80	40		40	160		40
Thalassiosira gravida				40	20			
Thalassiosira spp.	60	20	40		40	20		
Dictyocha fibula			40			20		
Dictyocha speculum		20	60			20		
Dinobryon spp.							20	
Eutreptia / Eutreptiella			20	20				
Mesodinium rubrum	20		180	40	40		1060	580
Pollen	20		20			60	20	
Tintinnids			20	60	40	20	80	
14-Feb-00								
Amphidinium cf. *carterae*	20	20						
Armoured dinoflagellate	20							
Dinophysis acuminata			20					
Gyrodinium cf. *spirale*	20	40		20	20			
Prorocentrum micans						20		
Unarmoured dinoflagellate							20	
Centrale diatom							20	
Chaetoceros spp.		20	20		20			
Coscinodiscus spp.	40	100	40	100		20	20	20
Cylindrotheca closterium	80	20	200	180	200	300	220	160
Ditylum brightwellii		20		60	40	20	20	20

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
14-Feb-00 (continued)								
Guinardia delicatula	20				60			20
Licmophora abbreviata	20							
Melosira spp.					40			
Navicula sp.		60		60	80	40	80	60
Odontella aurita						20	20	
Odontella regia	20					20		
Paralia marina						20		
Pennate diatom	40	20		80	20	120	40	
Pleurosigma angulatum	20			40		20		
Pseudo-nitzschia delicatissima group							100	
Rhizosolenia setigera					20		60	
Skeletonema costatum	80	20		20	20			20
Stephanopyxis turris					20			
Thalassionema nitzschioides						20		
Thalassiosira auguste-lineata				20				
Thalassiosira spp.	40	80		20	100	140	20	
Dictyocha speculum			20				20	
Eutreptia / Eutreptiella				80	20			
Mesodinium rubrum	40	60			20		340	60
Pollen							20	
Tintinnids		20	20	40	40	20		
14-Mar-00								
Armoured dinoflagellate					20			20
Dinophysis norvegica								20
Gyrodinium cf. *spirale*	120	240	20	20			40	200
Prorocentrum micans	20							
Unarmoured dinoflagellate								20
Asterionellopsis glacialis	20			20	20			
Centrale diatom					20			
Chaetoceros ingolfianus						20		
Chaetoceros spp.	60				20			60
Coscinodiscus spp.				20				
Cylindrotheca closterium	80	80		180	60	160	40	20
Ditylum brightwellii			20	20	20	20		20
Gyrosigma fasciola	40							20
Melosira ambigua								20
Melosira spp.				20			20	
Navicula sp.			40	20		60	40	
Paralia marina					20			
Pennate diatom	40	80		20	60	80		20
Pseudo-nitzschia delicatissima group							20	
Rhizosolenia setigera			20		40		20	
Rhizosolenia spp.						20		
Skeletonema costatum		20	20	20	80	20		20
Tabellaria spp.		20					20	
Thalassionema nitzschioides				40				20
Thalassiosira auguste-lineata		20						
Thalassiosira gravida						20		20
Thalassiosira spp.				20				
Triceratium alternans				20				
Dictyocha speculum	20			20				
Dinobryon spp.							20	
Eutreptia / Eutreptiella	20	20						40
Mesodinium rubrum	260	20	20	180	80	40	580	1360
Pollen		20						
Tintinnids		40		60	60		20	1080

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
11-Apr-00								
Armoured dinoflagellate			40				20	160
Gyrodinium cf. *spirale*	60	20		40	20	20		440
Protoperidinium spp.	20							
Unarmoured dinoflagellate				40				300
Achnanthes sp.		20						
Actinoptychus senarius					80	60		
Asterionella formosa							400	80
Asterionellopsis kariana					20	20		
Centrale diatom				20				20
Chaetoceros ingolfianus	40	20		20				20
Chaetoceros spp.	80		60	100				60
Corethron criophilum					40			
Coscinodiscus spp.	20	20	60		20			20
Cylindrotheca closterium	80	60	40	200	220	60	40	60
Ditylum brightwellii		20	20					
Fragilaria spp.						40		
Grammatophora marina			20					
Licmophora abbreviata			20		20			
Melosira spp.	20	20		40	20			
Navicula sp.	60			80	20	40		
Odontella aurita		20					20	
Odontella regia	20							
Paralia marina		40			20	20		
Pennate diatom				80	140	20	60	260
Pleurosigma / Gyrosigma			20		20			
Pleurosigma angulatum	20					20		
Pseudo-nitzschia delicatissima group							380	20
Rhizosolenia hebetata		20	60					
Rhizosolenia setigera	40		20					
Rhizosolenia spp.				40	20	20		
Skeletonema costatum	20		20	60	40		20	
Thalassionema nitzschioides				20				
Thalassiosira nordenskioeldii	20							
Thalassiosira spp.	20	20		40	20			20
Ciliate			20					
Copepoda	20			20				
Dinobryon spp.							20	60
Eutreptia / Eutreptiella			80					920
Litostomatea	60	220	80	40				120
Mesodinium rubrum	1180	1080	1200	40	20		100	8440
Parafavella sp.					20			
Pollen	20	20			40			
Ptychocylis sp.			20					
Tintinnids	260	1680	200		20	20	20	900
02-May-00								
Alexandrium fundyense		60						20
Alexandrium ostenfeldii		20	20				20	
Amphidinium cf. *carterae*	20	20				20		
Armoured dinoflagellate		20		20			60	
Ceratium fusus						20		
Ceratium longipes	40	40	40	20	20	60	20	60
Ceratium spp.		20						
Dinophysis acuminata								20
Dinophysis norvegica		20						
Dinophysis spp.		40			40			40
Gyrodinium cf. *spirale*	100	200	40	40	40	80	60	
Heterocapsa triquetra	20	60	40					60
Protoperidinium spp.	20							20
Scrippsiella sp.		40						

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
02-May-00 (continued)								
Unarmoured dinoflagellate	20	80		40	20	60		
Achnanthes sp.		20						
Actinoptychus senarius	40							
Centrale diatom			20			20		
Chaetoceros convolutus							20	
Chaetoceros debilis	40		20	20			20	20
Chaetoceros decipiens			20				40	
Chaetoceros socialis								20
Chaetoceros spp.	80	20	60	20	20		140	80
Chaetoceros spp. (phaeoceros)					40			
Coscinodiscus spp.	20	80		120		80	20	80
Coscinodiscus wailesii				40				
Cylindrotheca closterium	100	20	20	60	40	60	80	40
Ditylum brightwellii								40
Grammatophora marina				20				
Guinardia striata	20							
Gyrosigma fasciola							20	
Leptocylindrus minimus	20							
Licmophora abbreviata		20						
Melosira spp.					40			20
Navicula sp.	20	20			20		20	40
Paralia marina						20		
Pennate diatom	20			20		60	160	
Pleurosigma angulatum								20
Pseudo-nitzschia seriata group								20
Rhizosolenia hebetata							20	
Rhizosolenia setigera			20					
Skeletonema costatum	20		20		20			20
Thalassionema nitzschioides								20
Thalassiosira gravida			20					
Thalassiosira nordenskioeldii							20	20
Thalassiosira spp.	120	40	40	20		20	100	400
Copepoda				20	20		20	
Dictyocha speculum				40	40			
Dinobryon spp.							60	20
Eutreptia / Eutreptiella			40	80			60	180
Litostomatea	460	740	20	20			560	900
Mesodinium rubrum	1420	680	740	560	100	100	540	1240
Pollen	20							
Ptychocylis sp.		280						40
Tintinnids	640	1080	20	220	20		200	1120
11-May-00								
Alexandrium fundyense			20					
Amphidinium cf. *carterae*			60					
Armoured dinoflagellate			100					
Ceratium lineatum								20
Ceratium longipes			20				20	
Ceratium spp.			40					
Gyrodinium cf. *spirale*			20				40	
Heterocapsa triquetra			40					
Protoperidinium spp.								20
Centrale diatom			20					
Chaetoceros compressus								20
Chaetoceros constrictus							60	
Chaetoceros convolutus							20	
Chaetoceros debilis			40				80	60
Chaetoceros ingolfianus			20				80	
Chaetoceros laciniosus								20
Chaetoceros simplex							20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
11-May-00 (continued)								
Chaetoceros spp.			20				460	240
Coscinodiscus spp.			140					80
Cylindrotheca closterium			140				240	160
Ditylum brightwellii			60					
Guinardia delicatula								20
Leptocylindrus minimus							20	
Navicula sp.							20	60
Pleurosigma / Gyrosigma								60
Pleurosigma angulatum							40	20
Pseudo-nitzschia delicatissima group			20					
Rhizosolenia hebetata			20					
Skeletonema costatum			40					20
Thalassiosira auguste-lineata							40	
Thalassiosira baltica							40	20
Thalassiosira gravida							60	
Thalassiosira nordenskioeldii								40
Thalassiosira spp.			100				1240	880
Dictyocha speculum								20
Eutreptia / Eutreptiella			20				40	60
Litostomatea							40	
Mesodinium rubrum			2540				1280	1020
Pollen								20
Ptychocylis sp.			100					20
Tintinnids			2540				260	360
16-May-00								
Alexandrium fundyense	200	200	120	80	20			80
Alexandrium fundyense (duplet)	20	40	20					
Alexandrium ostenfeldii		20		20	20			80
Amphidinium cf. *carterae*		20		20	20			80
Armoured dinoflagellate	40	300		40				240
Ceratium lineatum			20	20				
Ceratium longipes	40	60	40	40	20			160
Ceratium spp.		40						
Dinophysis acuminata		60						
Dinophysis acuta	40		20	40				
Dinophysis norvegica		20	20				20	80
Gyrodinium cf. *spirale*	80	180	180	140	40		60	240
Heterocapsa triquetra	20	660	80	120				400
Protoperidinium brevipes		20						
Protoperidinium spp.	20							
Scrippsiella sp.		20						
Unarmoured dinoflagellate		160	40					
Achnanthes sp.					20			
Asterionellopsis glacialis								80
Asterionellopsis kariana						20		
Centrale diatom						40		
Chaetoceros compressus								240
Chaetoceros constrictus					20			
Chaetoceros convolutus var. *trisetosa*							20	
Chaetoceros debilis	20		60	20			140	1600
Chaetoceros decipiens	20			40			40	880
Chaetoceros ingolfianus	20			20			180	2320
Chaetoceros lorenzianus					20			
Chaetoceros simplex					20			320
Chaetoceros spp.	40	20	140	200	120	20	800	10560
Chaetoceros teres							20	80
Coscinodiscus spp.	80	120	20	40	40	200	20	320
Cylindrotheca closterium	60	60	40	80	60	20	160	160
Ditylum brightwellii	20							

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
16-May-00 (continued)								
Fragilaria spp.					20			
Gyrosigma tennuissimum						20		
Leptocylindrus minimus		40					20	
Melosira spp.						20		
Navicula sp.	20					40	40	
Odontella aurita		20						
Paralia marina					20			
Pennate diatom	20				40	20	80	
Pleurosigma angulatum	20			20			40	
Pseudo-nitzschia delicatissima group					20		60	
Rhizosolenia setigera							20	80
Skeletonema costatum					20			80
Stephanopyxis turris				40				80
Thalassionema nitzschioides						20		
Thalassiosira auguste-lineata				40			40	
Thalassiosira gravida				60	20			240
Thalassiosira nordenskioeldii							100	1040
Thalassiosira spp.	720	60	960	2240	560	60	4280	47280
Brachionus spp.							20	80
Copepoda	20				20		40	
Dictyocha speculum		140		40				
Eutreptia / Eutreptiella	20	100	40	60		20	60	320
Mesodinium rubrum	1880	1300	1900	1140	100		940	9040
Pollen	40	40			20			
Ptychocylis sp.	80	20		80				
Tintinnids	100	80	240	520			40	560
23-May-00								
Alexandrium fundyense	760	280		80				2400
Alexandrium fundyense (duplet)	40							160
Alexandrium ostenfeldii	80							200
Amphidinium cf. *carterae*	80				80			
Amylax triacantha	40							
Armoured dinoflagellate	520	320	40			20		440
Ceratium lineatum	40	20	40					
Ceratium longipes	360	120	40					
Ceratium tripos						20		
Dinophysis acuminata		20						
Dinophysis norvegica			40					
Dinophysis spp.		40						40
Gyrodinium cf. *spirale*	320	320	120			20		160
Heterocapsa triquetra	520	360						1760
Protoperidinium brevipes	120							80
Protoperidinium ovatum	40							
Protoperidinium spp.		100	40					120
Scrippsiella sp.	160	200						560
Unarmoured dinoflagellate	240	520	40					560
Centrale diatom					160			
Chaetoceros compressus								120
Chaetoceros convolutus var. *trisetosa*					80			
Chaetoceros debilis	80		80	120	160	100		400
Chaetoceros decipiens	40	20					80	240
Chaetoceros diadema						60		
Chaetoceros furcellatus				80		40		40
Chaetoceros ingolfianus	320	20	320	80	320	40	640	320
Chaetoceros laciniosus								240
Chaetoceros similis								40
Chaetoceros simplex	80						160	40
Chaetoceros spp.	840	80	240	560	400	160	3120	8680
Chaetoceros teres		20					160	80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
23-May-00 (continued)								
Corethron criophilum	80							
Coscinodiscus spp.	720	100	80		80	20	80	80
Cylindrotheca closterium	160	60	160	280	480	20	240	120
Ditylum brightwellii			40	40		20		80
Leptocylindrus minimus			120				80	120
Licmophora abbreviata	40	20						
Melosira ambigua							80	
Melosira spp.						20		
Navicula sp.				40				
Paralia marina				40				
Pennate diatom	40				240	20		
Pleurosigma / Gyrosigma								40
Pleurosigma angulatum	80		80		80	20	80	
Pseudo-nitzschia delicatissima group							80	80
Skeletonema costatum	40	20	80		80			
Stephanopyxis turris	40		40					
Thalassiosira auguste-lineata					80			
Thalassiosira gravida	40		80	200		20		
Thalassiosira nordenskioeldii	200	60	360					480
Thalassiosira spp.	16400	1160	11120	13880	13840	2560	31680	9160
Brachionus spp.								240
Copepoda								20
Dictyocha speculum		140						40
Dinobryon spp.							80	
Eutreptia / Eutreptiella	120	200	40				160	960
Helicostomella sp.								40
Litostomatea	2080	360	40					760
Mesodinium rubrum	3120	6480	1640	280	80		480	4760
Pollen	40						80	40
Ptychocylis sp.		20	40					
Tintinnids	440	960	240	120				640
30-May-00								
Alexandrium fundyense	120	280	100				80	40
Alexandrium fundyense (duplet)			20					
Alexandrium ostenfeldii	40							40
Amphidinium cf. *carterae*				80				
Armoured dinoflagellate	60	40	320				80	80
Ceratium lineatum	20							
Ceratium longipes	100	200	120					
Ceratium spp.								80
Dinophysis acuta			20					
Dinophysis norvegica	20							
Dinophysis spp.	20							
Gyrodinium cf. *spirale*	160	280	240					160
Heterocapsa triquetra	40	80	240					120
Prorocentrum micans		80						
Protoperidinium brevipes				80			80	
Protoperidinium ovatum	20							
Protoperidinium spp.								80
Scrippsiella trochoidea			80				80	
Unarmoured dinoflagellate	20	40	60					
Cerataulina pelagica	20							
Chaetoceros compressus			40				400	320
Chaetoceros convolutus var. *trisetosa*	40							
Chaetoceros debilis	80	160	120	240	80		960	1440
Chaetoceros decipiens	40	80	20	240			320	320
Chaetoceros furcellatus			80	240	640	180	1040	160
Chaetoceros ingolfianus	160	400	20	400	320		1040	320
Chaetoceros laciniosus							80	520

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
30-May-00 (continued)								
Chaetoceros similis			40					
Chaetoceros simplex								40
Chaetoceros socialis			20					
Chaetoceros spp.	140	840	200	1120	560	80	14720	4960
Chaetoceros teres				80				
Corethron criophilum	20							
Coscinodiscus spp.	100	40	60	80		40	80	
Coscinodiscus wailesii		40						
Cylindrotheca closterium	120	80	40	240	640		560	600
Ditylum brightwellii	20		20	320	160			40
Eucampia zodiacus					80			
Fragilaria spp.						20		
Guinardia delicatula		240	280			160	80	
Lauderia annulata						20		
Leptocylindrus minimus	80						160	360
Licmophora abbreviata					80	20		
Navicula sp.	20				160	40		
Pennate diatom						60		
Pleurosigma angulatum						20		
Porosira glacialis			40					
Pseudo-nitzschia delicatissima group			120					200
Rhizosolenia setigera					80			
Skeletonema costatum	20		60	160	80			240
Stephanopyxis turris			20	160			160	280
Thalassiosira angustе-lineata	60		140	160	400		80	160
Thalassiosira gravida	380		160	240	80	20	160	360
Thalassiosira nordenskioeldii	220		300		80		400	1800
Thalassiosira spp.	11560	41440	6480	70560	33600	2740	25040	9320
Thalassiothrix longissima				80				
Copepoda	20							
Dictyocha speculum	40	40	160					
Dinobryon spp.			20					
Ebria tripartita			20					
Eutreptia / Eutreptiella		320	240				80	240
Helicostomella sp.							880	120
Litostomatea			40	80				
Mesodinium rubrum	1000	520	2460	1200	160		1200	4360
Pollen	20		20	80				
?ychocylis sp.	20		20					
Tintinnids	200	480	380	160				
06-Jun-00								
Alexandrium fundyense			400	160				120
Alexandrium fundyense (duplet)			80					
Alexandrium ostenfeldii				160				
Armoured dinoflagellate			80	160				240
Ceratium longipes						20		40
Dinophysis acuminata								80
Dinophysis acuta					80			
Dinophysis norvegica								160
Gonyaulax spinifera				160				
Gyrodinium cf. *spirale*	320						160	360
Heterocapsa triquetra		80	80	160			80	
Protoperidinium spp.			80					80
Scrippsiella trochoidea			80					
Unarmoured dinoflagellate							320	40
Actinoptychus senarius						20		
Asterionellopsis glacialis			80				80	
Chaetoceros borealis				160				
Chaetoceros compressus	320	80	80		160	80	320	640

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
06-Jun-00 (continued)								
Chaetoceros constrictus		80						
Chaetoceros debilis	1120	1040	640	640	400	140	1120	1720
Chaetoceros decipiens			240			40	80	
Chaetoceros diadema							80	
Chaetoceros didymus							160	
Chaetoceros furcellatus	640		160		400	100	240	200
Chaetoceros ingolfianus	800	480	160		80		480	320
Chaetoceros laciniosus	160	160	320					80
Chaetoceros lorenzianus				160				
Chaetoceros similis							160	
Chaetoceros simplex							80	
Chaetoceros spp.	640	880	1040	1280	400	200	1520	2080
Chaetoceros spp. (phaeoceros)							80	
Chaetoceros teres		240						40
Coscinodiscus spp.		160	80			40	160	40
Coscinodiscus wailesii							80	
Cylindrotheca closterium	1440	960	640	960	800	280	960	520
Detonula confervacea					80			
Ditylum brightwellii	160		80		160			280
Eucampia zodiacus			80					
Guinardia delicatula	960	480	80	160		60		160
Lauderia annulata				160				
Leptocylindrus danicus			80					
Leptocylindrus mediterraneus					80			
Leptocylindrus minimus		80	480					160
Licmophora abbreviata								40
Navicula sp.							80	
Paralia marina		80				60		
Pennate diatom		80			160	40		
Pleurosigma angulatum	160	80				100	320	200
Pleurosigma angulatum var. *strigosa*				160				
Porosira glacialis			160					
Pseudo-nitzschia delicatissima group	160	80	240		80			40
Rhizosolenia hebetata						20		
Skeletonema costatum	320	720	240	640	240	60		200
Stephanopyxis turris	160		560	320	80	20	160	960
Thalassiosira auguste-lineata		160	160	160			160	80
Thalassiosira baltica							80	
Thalassiosira gravida	1440	560	1520	480	160	40	80	720
Thalassiosira nordenskioeldii	1920	960	2000			40	160	720
Thalassiosira spp.	60640	50720	36640	80000	52640	51840	42240	15720
Thalassiothrix longissima	160							
Brachionus spp.			80					40
Copepoda						20	40	
Dictyocha speculum								40
Eutreptia / Eutreptiella			160	160	80	20		40
Favella sp.								40
Helicostomella sp.	160							440
Mesodinium rubrum	1440	2400	4160	2720	80		2240	3520
Pollen			160		80		80	120
Tintinnids		160	480			20	160	120
13-Jun-00								
Alexandrium fundyense		180	40	240	80			80
Alexandrium fundyense (duplet)				80				
Alexandrium ostenfeldii	80	20		80				
Amphidinium cf. *carterae*				240		20		
Amphidinium cf. *sphenoides*								40
Armoured dinoflagellate	160	700	320	80	160			80
Ceratium horridum			80					40

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Jun-00 (continued)								
Ceratium lineatum		40						20
Ceratium longipes		120	120			20		
Ceratium tripos			40					
Dinophysis acuminata	40							
Dinophysis acuta		20						
Dinophysis norvegica		20					20	
Gyrodinium cf. *spirale*	120	60	120	480	400	220	360	320
Heterocapsa triquetra	80	400	20				20	160
Minuscula bipes	40							
Protoperidinium brevipes	120		20	80				60
Protoperidinium spp.	80	80	100	80		60	40	200
Scrippsiella trochoidea		60	100		80			100
Unarmoured dinoflagellate	120	80	160	240	160	280	300	200
Actinoptychus senarius				240				
Asterionellopsis glacialis	40							
Chaetoceros compressus	80	20	80	160	80	180	540	340
Chaetoceros convolutus var. *trisetosa*		40		80				
Chaetoceros debilis	400	120	60	560	80	480	1620	100
Chaetoceros decipiens		20	40			20	180	
Chaetoceros furcellatus	40							
Chaetoceros ingolfianus	80						220	160
Chaetoceros laciniosus		40	60				240	
Chaetoceros socialis		80					260	
Chaetoceros spp.	440	120	140	1280	1280	360	680	800
Corethron criophilum		20						
Coscinodiscus spp.	120			80	80		60	
Cylindrotheca closterium	1640	400	140	4960	2320	1340	1280	280
Detonula confervacea								100
Ditylum brightwellii	120	20		240	80	20	120	
Guinardia delicatula	7120	8440	10240	30080	3520	1220	240	220
Leptocylindrus danicus						40		
Leptocylindrus minimus	160	280	60	480	160	20	260	60
Navicula sp.					80		40	
Pennate diatom					80	20		
Pleurosigma angulatum	80						100	
Porosira glacialis		20					40	
Pseudo-nitzschia delicatissima group	40	40	40	160	80		100	40
Pseudo-nitzschia seriata group	40	140	20					
Rhizosolenia hebetata					80			20
Skeletonema costatum	40	20	60	80	80	80	220	
Stephanopyxis turris	120	60	80	160	240	120	480	40
Thalassionema nitzschioides				160			20	
Thalassiosira auguste-lineata	160	60	100	560	480	260	80	
Thalassiosira baltica	80							
Thalassiosira gravida	40	280	200	160	160	240	380	60
Thalassiosira nordenskioeldii	80	40	60		80	100	160	20
Thalassiosira spp.	6640	2360	3680	20640	34000	9840	2160	220
Brachionus spp.	80							
Copepoda	80	80		80			20	20
Dictyocha speculum	80	100	40	80				60
Ebria tripartita	40							
Eutreptia / Eutreptiella	80	40		80		20	20	60
Flagellate								20
Helicostomella sp.			20				160	1560
Litostomatea	40							
Mesodinium rubrum	2400	2940	880	1040	560	140	1240	1500
Parafavella sp.				80	80			
Pollen			20				640	20
Tintinnids	440	660	440	80		20	260	460

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
20-Jun-00								
Alexandrium fundyense	200	20	240	640			20	140
Alexandrium fundyense (duplet)	40							
Amphidinium cf. *carterae*				160				
Armoured dinoflagellate	240	80	160					120
Ceratium horridum	40	20	120					
Ceratium lineatum								
Ceratium longipes	40	60	40	80	160			40
Ceratium spp.								20
Ceratium tripos			40					
Dinophysis norvegica			20					
Dinophysis spp.		20		80				
Gyrodinium cf. *spirale*	120	20	100	640	240	560	300	
Heterocapsa triquetra	40	160	360					140
Minuscula bipes				80				
Protoperidinium brevipes	80		20					40
Protoperidinium depressum	80							
Protoperidinium spp.	160	40	200		80		20	120
Scrippsiella sp.				480				
Scrippsiella trochoidea	80		20	240				60
Unarmoured dinoflagellate	40	80		320	480	240	160	40
Asterionellopsis glacialis						40		
Chaetoceros compressus	80		60	1760	80	200	380	140
Chaetoceros convolutus var. *trisetosa*	40	40	20					
Chaetoceros debilis	1280	60	60	1200	320	40	2720	1540
Chaetoceros decipiens	40			240	80	80	160	
Chaetoceros ingolfianus	40			320	160	200	100	
Chaetoceros laciniosus	40	20	20	160	80	40	80	60
Chaetoceros lorenzianus							20	
Chaetoceros socialis	600	60	100				1580	200
Chaetoceros spp.	720	20	320	6400	960	720	360	160
Chaetoceros spp. (phaeoceros)								
Chaetoceros teres							20	
Corethron criophilum				80	80			
Coscinodiscus spp.	40			80	80	80		
Coscinodiscus wailesii						40		
Cylindrotheca closterium	2000	1540	980	9600	2320	560	1680	640
Dactyliosolen fragilissimus	80							
Detonula confervacea								
Ditylum brightwellii	120	20	60	880		40	40	20
Eucampia zodiacus				80				
Guinardia delicatula	32000	9840	11320	28080	1760	240	400	3600
Lauderia annulata								
Leptocylindrus danicus	40			160			20	
Leptocylindrus minimus	560	260	40	160	160		140	100
Licmophora abbreviata	40							
Melosira ambigua		20						
Navicula sp.					80	40	20	
Paralia marina								20
Pennate diatom		20						
Pleurosigma angulatum	240						420	
Pleurosigma angulatum var. *strigosa*					80			
Porosira glacialis	40							20
Pseudo-nitzschia delicatissima group	40	140	20	400	160		180	40
Pseudo-nitzschia seriata group	120			1600				
Rhizosolenia hebetata		20	20	80				
Skeletonema costatum				160			100	
Stephanopyxis turris	960	140	80	1520		240	220	260
Thalassionema nitzschioides			40					
Thalassiosira auguste-lineata	360	40	180	800	480	80	20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
20-Jun-00 (continued)								
Thalassiosira gravida	2240	40	40	240	800	200		100
Thalassiosira nordenskioeldii	160	40	20					
Thalassiosira spp.	4480	460	1920	26880	20240	16480	580	180
Brachionus spp.				80				20
Copepoda	40	20		80			40	60
Dictyocha speculum		20	100					20
Dinobryon spp.							20	
Eutreptia / Eutreptiella		20	20	1360	160			40
Flagellate			40					
Helicostomella sp.	240	200	1000				140	760
Mesodinium rubrum	1120	1440	1420	4560		160	2100	3500
Pollen	160	40	140				60	80
Tintinnids	200	320	520	960	240	40	480	860
27-Jun-00								
Alexandrium fundyense	160	1520	1840	40	20			
Amphidinium cf. *carterae*				120				
Amphidinium cf. *sphenoides*						120		
Amylax triacantha	40		40					
Armoured dinoflagellate	80	920	1640	160	20		160	120
Ceratium furca		80						
Ceratium horridum			40	160			40	60
Ceratium lineatum		80	80	40		40		20
Ceratium longipes	40	40	320	80		40		
Ceratium spp.			40					
Ceratium tripos		40	80					
Dinophysis acuminata			40	80				120
Dinophysis acuta				40			40	80
Dinophysis norvegica	40	80	160	40				40
Dinophysis spp.			120	80				100
Gonyaulax spinifera								20
Gyrodinium cf. *spirale*			480	160	380	2120	440	
Heterocapsa triquetra	80	2240	4120	160				20
Minuscula bipes		40	40	40				
Protoperidinium brevipes	40			120				
Protoperidinium conicum								
Protoperidinium depressum		40	40	40				
Protoperidinium spp.	80		560	200		40		80
Scrippsiella sp.				40				
Scrippsiella trochoidea	40	200	320					
Unarmoured dinoflagellate	280	40	520	440	60	480	40	
Actinoptychus senarius					20			
Asterionellopsis glacialis						40		
Centrale diatom				80				
Cerataulina pelagica		40		200			240	100
Chaetoceros compressus	160	80	520	680	460	1040	160	
Chaetoceros convolutus var. *trisetosa*	120	40	40					
Chaetoceros debilis	320		160	40	240	480	4320	
Chaetoceros decipiens				80	40	200	40	
Chaetoceros ingolfianus			160	80	160	240		
Chaetoceros laciniosus			40				80	
Chaetoceros simplex							320	
Chaetoceros socialis	2640	2400	4640	800	160		8480	20
Chaetoceros spp.	360	160	1400	1920	1400	1560	160	
Corethron criophilum		40			20			
Coscinodiscus spp.			120		60	80		
Cylindrotheca closterium	1120	800	1160	1400	1580	800	5640	40
Dactyliosolen fragilissimus		40						
Detonula confervacea					20			
Ditylum brightwellii	80							

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
27-Jun-00 (continued)								
Guinardia delicatula	68470	17640	5080	7560	800	160	1880	1580
Guinardia flaccida								
Lauderia annulata					20	40		
Leptocylindrus danicus	40	40				80		
Leptocylindrus minimus	1720	80	200	120	140	40	400	
Navicula sp.				40	40			
Pennate diatom								
Pleurosigma angulatum	80						40	
Pleurosigma angulatum var. *strigosa*							40	
Porosira glacialis			160					
Pseudo-nitzschia delicatissima group		80	80	80	80		160	
Pseudo-nitzschia seriata group	80			120		80		
Rhizosolenia imbricata				40				
Skeletonema costatum					40		80	
Stephanopyxis turris	280		160	200	140	360	320	
Thalassionema nitzschioides						80		
Thalassiosira angustie-lineata			40	160	100	80		
Thalassiosira gravida	40		40		140	80		
Thalassiosira nordenskioeldii		40	80					
Thalassiosira spp.	240	280	2400	1160	7440	9960		
Brachionus spp.			40	40				
Copepoda	40	200	80	200		40		480
Dictyocha speculum	120	320	1040	520	20			
Ebria tripartita		40						
Eutreptia / Eutreptiella	40	840	280	600			40	
Flagellate		40	280					
Helicostomella sp.	280	1560	1200	40			280	13120
Litostomatea			40	80		40		
Mesodinium rubrum	8400	2280	8880	1640	40		6400	7880
Pollen	160	120	40		20		200	40
Tintinnids	400	560	2200	400	100	240	640	320
04-Jul-00								
Alexandrium fundyense			160		20		20	20
Alexandrium ostenfeldii				40				
Amylax triacantha								20
Armoured dinoflagellate	80	40	240	80			40	40
Ceratium fusus	20							
Ceratium horridum			80					
Ceratium lineatum	80		240		20		20	
Ceratium longipes	220	80	480	200			20	40
Ceratium spp.		40				20		
Ceratium tripos			160					20
Dinophysis acuminata		80	80		20			60
Dinophysis acuta				40				
Dinophysis norvegica	20		400	80	20		20	180
Dinophysis spp.		40						60
Gyrodinium cf. *spirale*	20	40	240		60		220	
Heterocapsa triquetra			640	80				
Protoperidinium brevipes		40						
Protoperidinium depressum				40				
Protoperidinium spp.				160	60			40
Unarmoured dinoflagellate	20		160	40			100	40
Centrale diatom					20	20		
Cerataulina pelagica	60		560				80	20
Chaetoceros compressus	40	40	400	1120	100	60	20	
Chaetoceros convolutus var. *trisetosa*				40				
Chaetoceros debilis	60			40			180	40
Chaetoceros decipiens	20							20
Chaetoceros furcellatus						20		

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
04-Jul-00 (continued)								
Chaetoceros simplex	20				20		380	
Chaetoceros socialis	15080	27480	66160	17680	780		8560	1580
Chaetoceros spp.	60	120	160	680	180	140		
Corethron criophilum			80					
Coscinodiscus spp.						80		
Cylindrotheca closterium	360	280	560	680	660	120	2160	300
Eucampia zodiacus			160					
Guinardia delicatula	1880	2560	2000	720	240	60	1960	1240
Guinardia flaccida								40
Gyrosigma fasciola								
Leptocylindrus danicus	60	80		440				
Leptocylindrus mediterraneus					20			20
Leptocylindrus minimus	100	240	80		20		460	20
Licmophora abbreviata	20							
Navicula sp.	60	40		40	20	80	20	20
Paralia marina	20					80		
Pennate diatom							60	
Pleurosigma angulatum	220	240		200	80	240	520	400
Pleurosigma angulatum var. *strigosa*						40		
Pseudo-nitzschia delicatissima group		40					80	
Rhizosolenia hebetata							60	
Skeletonema costatum							100	
Stephanopyxis turris	60	280	400	360	40		20	20
Thalassionema nitzschioides					20			
Thalassiosira spp.	120			80	80	60	40	
Copepoda				120			20	20
Dictyocha speculum	60	80	240	40	60			20
Ebria tripartita								100
Eutreptia / Eutreptiella			80	40				
Helicostomella sp.	20		240				40	860
Mesodinium rubrum	480	2520	9600	480	40		1720	6320
Pollen	140		80	40		40	80	
Tintinnids	200	120	560	240	100	40	600	100
11-Jul-00								
Armoured dinoflagellate			160				40	80
Ceratium fusus		40						
Ceratium horridum				480				
Ceratium lineatum		80	80	160				320
Ceratium longipes		40		480			40	40
Ceratium spp.								40
Ceratium tripos			160					40
Dinophysis acuminata				160				40
Dinophysis norvegica								200
Dinophysis spp.				160				
Gonyaulax digitale								40
Gonyaulax spinifera								40
Gyrodinium cf. *spirale*							40	
Unarmoured dinoflagellate			240		160		80	
Cerataulina pelagica		40		320			160	1400
Chaetoceros compressus		160	1040	1920	640			
Chaetoceros convolutus var. *trisetosa*								40
Chaetoceros debilis								280
Chaetoceros decipiens		80		160				
Chaetoceros simplex							280	80
Chaetoceros socialis		29200	75280	206240	131360	160	9480	1600
Chaetoceros spp.		200	240	160			80	
Coscinodiscus spp.						40		80
Cylindrotheca closterium		120	80	160	960	100	1280	160
Dactyliosolen fragilissimus							40	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
11-Jul-00 (continued)								
Guinardia delicatula		80	240	320			1840	12960
Guinardia flaccida								80
Leptocylindrus danicus			240					
Leptocylindrus minimus		40					1520	40
Licmophora abbreviata							40	
Navicula sp.			80					
Pennate diatom					160			
Pleurosigma angulatum						40	80	
Pseudo-nitzschia delicatissima group							80	
Skeletonema costatum							40	
Stephanopyxis turris			160					40
Thalassionema nitzschioides					320	20		
Thalassiosira oestrupii			80					
Thalassiosira spp.						20	40	
Copepoda				480		20	40	40
Dictyocha speculum		80	240		320			200
Ebria tripartita					160			120
Eutreptia / Eutreptiella		120						160
Helicostomella sp.		80					120	1400
Mesodinium rubrum		400		320			1480	7600
Pollen						40	40	
Tintinnids		40	1040	480	320	20	480	320
17-Jul-00								
Alexandrium fundyense	80	40						
Alexandrium ostenfeldii								
Amphidinium cf. *carterae*		120						
Armoured dinoflagellate	240	360	40	80	40	40		
Ceratium fusus	40		20		80			
Ceratium lineatum	40	40	40					40
Ceratium longipes	200	160	60	100	240	80		160
Ceratium tripos	160	160	80	160		40		80
Dinophysis acuminata	120	120	20					40
Dinophysis acuta		40	40					40
Dinophysis norvegica	160	80	80	100				
Dinophysis spp.	80	40	20	40				
Gonyaulax digitale	80							
Gonyaulax spinifera		40						
Gyrodinium cf. *spirale*	80	360	120	20				160
Heterocapsa triquetra	600	640	300					160
Minuscula bipes			20					
Protoperidinium depressum			20					
Protoperidinium spp.	200	320	100	160	120	40		40
Scrippsiella trochoidea	40	40						
Unarmoured dinoflagellate	320	360	100	60	40		80	120
Centrale diatom								
Cerataulina pelagica		200		80		40	2960	2200
Chaetoceros compressus		80	20		40			
Chaetoceros convolutus var. *trisetosa*		40						
Chaetoceros debilis								40
Chaetoceros decipiens								
Chaetoceros simplex		40		20			1280	80
Chaetoceros socialis	14880	17920	5240	2680	54600	22040	38400	31280
Chaetoceros spp.	40		20	40	40	40	80	
Corethron criophilum						40		
Coscinodiscus spp.					40	40		
Cylindrotheca closterium	560	800	380	300	320	200	1200	360
Eucampia zodiacus								
Guinardia delicatula	80	200		20	40	80	18640	4520
Guinardia flaccida								40

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
17-Jul-00 (continued)								
Leptocylindrus minimus	40	80					10080	160
Licmophora abbreviata								
Melosira spp.				20				
Navicula sp.	120	120	20		40	40		
Pleurosigma angulatum	160	160			40		80	400
Pseudo-nitzschia delicatissima group		80			40		320	
Pseudo-nitzschia seriata group								
Skeletonema costatum	40	80	60		40		2080	40
Thalassiosira spp.				40			80	
Copepoda	80	40		100	40	40		
Dictyocha speculum	400	720	260	360	80		80	360
Ebria tripartita	40			120	40			
Eutreptia / Eutreptiella	120	200	60	40	40			
Litostomatea		880	300	40				400
Mesodinium rubrum	45360	12560	22720	340		40	2560	13880
Notholca spp.						40		
Pollen			40			80	240	
Tintinnids	4440	4640	1900	960	920	400	320	2680
25-Jul-00								
Alexandrium fundyense								
Amphidinium cf. *carterae*				80				
Amylax triacantha							80	
Armoured dinoflagellate	320			120		20	80	40
Ceratium fusus		40	240	40	20			80
Ceratium horridum		80	80					
Ceratium lineatum		120						120
Ceratium longipes			80		40			
Ceratium spp.		40						
Ceratium tripos		200	160					280
Dinophysis acuminata		40					80	240
Dinophysis acuta		40	80					
Dinophysis fortii		40						
Dinophysis norvegica		120	640	40				
Dinophysis rotundata			80					
Gyrodinium cf. *spirale*		40			20		160	40
Heterocapsa triquetra	160						80	120
Minuscula bipes							160	
Prorocentrum micans		40						
Protoperidinium depressum				40				40
Protoperidinium spp.	160	320	160	360	20		80	
Scrippsiella trochoidea					20			
Unarmoured dinoflagellate	800	80						280
Actinoptychus senarius						20		
Asterionellopsis glacialis						60		
Centrale diatom					20	80	74340	15480
Cerataulina pelagica	22560	440	2000	3960	240		80	
Chaetoceros debilis	800	40						
Chaetoceros lorenzianus							1440	440
Chaetoceros simplex				40	20		1200	40
Chaetoceros socialis	168320	45440	53360	4440	240		240	40
Chaetoceros spp.	640	40		120		20	160	
Corethron criophilum					40			
Coscinodiscus spp.					20	20		
Cylindrotheca closterium	1600	240	240	1040	160	140	400	
Ditylum brightwellii							80	
Eucampia zodiacus								
Fragilaria spp.								
Grammatophora marina		40						
Guinardia delicatula	6560	80	240	3440	540	380	20800	2520

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
25-Jul-00 (continued)								
Guinardia flaccida			80	80			400	200
Gyrosigma balticum		40						
Leptocylindrus minimus	480			160			7280	1760
Licmophora abbreviata		40						
Navicula sp.		80		40	40	40	160	
Paralia marina								
Pennate diatom				40				
Pleurosigma angulatum		80			20		160	
Pseudo-nitzschia delicatissima group					20		240	40
Rhabdonema spp.						20		
Skeletonema costatum				40	60		2560	
Thalassionema nitzschioides	160			40	20	40		
Thalassiosira spp.				120	40	60		
Copepoda	640	120				20	80	120
Dictyocha speculum	320	160	160		20	40	240	200
Ebria tripartita			160	120	40			320
Eutreptia / Eutreptiella				40				
Helicostomella sp.							160	240
Litostomatea	40	40	20	200	80		80	120
Mesodinium rubrum	4000	10440	1020	1440		180	13920	13680
Pollen								40
Tintinnids	640	280		240	140	80	960	320
31-Jul-00								
Alexandrium fundyense	160		80	320			80	480
Amphidinium cf. *carterae*					40			
Amylax triacantha	80							
Armoured dinoflagellate	6640	1920	1360	4480		40	120	15360
Ceratium fusus	80	160		240			40	
Ceratium lineatum	80		240	80				
Ceratium longipes	480	480		80				
Ceratium tripos	80	640	720	1040	40		40	80
Dinophysis acuminata	320	960	80	640				
Dinophysis acuta	400			80				
Dinophysis norvegica	80	560	80	880	80		40	
Dinophysis spp.	80							
Gonyaulax digitale								1200
Gonyaulax spinifera		80	240					320
Gyrodinium cf. *spirale*	720	720	1040	320			200	320
Heterocapsa triquetra	14720	58720	1120	21600				12240
Minuscula bipes		80					40	
Prorocentrum micans								160
Prorocentrum minimum								
Protoperidinium brevipes								80
Protoperidinium depressum				80				
Protoperidinium spp.			720	560	40	20	40	160
Scrippsiella sp.				160				
Scrippsiella trochoidea	160	80	160	160				960
Unarmoured dinoflagellate	160	1600	720	1600			280	2000
Asterionellopsis glacialis	240			80				
Centrale diatom						40		
Cerataulina pelagica	14800	10800	10080	13440	1480	840	#####	12640
Chaetoceros compressus		160						
Chaetoceros debilis			80	240		20	40	80
Chaetoceros decipiens							40	
Chaetoceros furcellatus						20		
Chaetoceros simplex					40	20	5040	240
Chaetoceros socialis	27600	17280	27200	13280	320	80		160
Chaetoceros spp.	160		240	80	80	40	320	160
Corethron criophilum	80	80				20		80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
31-Jul-00 (continued)								
Cylindrotheca closterium	1600	1600	1280	2320	2440	1180	840	560
Dactyliosolen fragilissimus	160							
Ditylum brightwellii	80	240		240				
Eucampia zodiacus					40		80	
Guinardia delicatula	800	80	80	480	600	380	800	560
Guinardia flaccida	160		80		40			
Gyrosigma tennuissimum								
Leptocylindrus minimus	320	240	1200	80	120	60	6560	400
Navicula sp.	80							
Paralia marina						40		
Pennate diatom				80	40	40		
Pleurosigma / Gyrosigma		80	80					
Pleurosigma angulatum	400			80	40		80	
Pseudo-nitzschia delicatissima group	560	1440	1280	1360	40	60	400	160
Rhizosolenia imbricata						40		
Skeletonema costatum	57040	145290	136940	130260	8280	3080	81830	2480
Thalassionema nitzschioides	320		160	80	40	20		
Thalassiosira auguste-lineata		160						
Thalassiosira baltica				80				
Thalassiosira gravida	80							
Thalassiosira spp.	1200	400	3760	1520	2200	240	80	
Brachionus spp.	80							
Copepoda			80	80			120	
Dictyocha speculum	240	640	480	1120	80	20	120	880
Ebria tripartita		80		80			40	640
Eutreptia / Eutreptiella	160							
Flagellate				80				
Helicostomella sp.		160					80	
Litostomatea	400	640	640	160				160
Mesodinium rubrum	2560	800	2480		240	100	2400	16000
Pollen			240				40	80
Polyasterias problematica				80				
Tintinnids	1680	1120	960	3360	240	120	680	3040
08-Aug-00								
Alexandrium fundyense		160	160					40
Amphidinium cf. *carterae*								
Amylax triacantha							20	
Armoured dinoflagellate	800	4240	2080	80	40	40		1080
Ceratium fusus	160	160	320		40		20	200
Ceratium lineatum	240	480	400	240	40		80	440
Ceratium longipes	160	160	240	160	60		40	160
Ceratium spp.		80						
Ceratium tripos		720	320	160	120		120	600
Dinophysis acuminata	480		160	80			20	360
Dinophysis norvegica	80	320	400	320	40		120	
Dinophysis spp.			160					80
Gonyaulax digitale			80					
Gonyaulax spinifera	80	4480	480				20	400
Gyrodinium cf. *spirale*	1200	320	400	240	20		340	
Heterocapsa triquetra	6000	163660	38880	720	20			6600
Prorocentrum minimum				80				200
Protoperidinium depressum	160		160	80				
Protoperidinium spp.	720	800	240	240	40		80	80
Scrippsiella sp.			80					
Scrippsiella trochoidea		320	160	80			40	40
Unarmoured dinoflagellate	2000	2400	3200	480	20		300	200
Actinoptychus senarius						60		
Asterionellopsis glacialis	160		160	480	120	60		
Centrale diatom								

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
08-Aug-00 (continued)								
Cerataulina pelagica	400	80	160	400	60	240	40	
Chaetoceros compressus	160		160	320	200			
Chaetoceros convolutus var. *trisetosa*					20			
Chaetoceros debilis	400	400	320	320	160			80
Chaetoceros decipiens	80	320	160		120			80
Chaetoceros lorenzianus				160				
Chaetoceros simplex	80		400			20	180	40
Chaetoceros socialis	21040	6000	16480	880		600		
Chaetoceros spp.	640	1520	640	1360	320	100		40
Corethron criophilum	80	160		320		40	60	80
Coscinodiscus centralis			80					
Coscinodiscus spp.				80	120	80		
Cylindrotheca closterium	1440	240	640	1200	1460	720	460	40
Dactyliosolen fragilissimus		80		400	220	160	40	
Ditylum brightwellii		160	80	80	60	20		
Eucampia zodiacus	80							
Guinardia delicatula	480			240	200	200	160	
Guinardia flaccida	240			160		40		
Gyrosigma tennuissimum	80							
Leptocylindrus danicus	160							
Leptocylindrus minimus	1600	480	400	80	100	80	60	
Navicula sp.					40	20		
Odontella regia						20		
Paralia marina					20			
Pennate diatom				80		20		
Pleurosigma / Gyrosigma								
Pleurosigma angulatum	320				20		80	
Pleurosigma angulatum var. *strigosa*	320	80		240	120	20		
Pseudo-nitzschia delicatissima group	1920	400	880	400	360	40	40	
Pseudo-nitzschia seriata group		80	160	80				
Skeletonema costatum	66800	116900	195390	131920	51770	7960	660	
Thalassionema nitzschioides	80	80	480	80	40	60	20	
Thalassiosira baltica					40			
Thalassiosira gravida				80				
Thalassiosira oestrupii				80				40
Thalassiosira spp.	400		2720	5040	1480	280		
Copepoda		400	80	240		20	20	40
Dictyocha speculum	640	480	1840	560	220		240	3960
Ebria tripartita	240	80	160		20	20	120	3120
Eutreptia / Eutreptiella	160		80					
Flagellate	80	80	160					
Helicostomella sp.	240	80	80				120	280
Mesodinium rubrum	2480	8720	4720		20		6240	5320
Pollen	80						20	
Tintinnids	160	1200	1120	240	120	60	600	680
15-Aug-00								
Alexandrium fundyense		240	240					
Amphidinium cf. *carterae*			160					
Amylax triacantha		80	80					
Ceratium fusus	400	560	800					240
Ceratium lineatum	720	1040	240			40	60	80
Ceratium longipes	400	160	240					
Ceratium spp.		80	80				20	
Ceratium tripos	560	1920	240					200
Dinophysis acuminata	400	400	560					120
Dinophysis acuta							20	
Dinophysis fortii								
Dinophysis norvegica	1040	800	240	40			20	200
Gonyaulax spinifera	2240	12320	240					80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
15-Aug-00 (continued)								
Gyrodinium aureolum			80					
Gyrodinium cf. *spirale*	3040	6800	2560		40		140	680
Heterocapsa triquetra	10800	8320	11280					840
Prorocentrum micans	80	80						80
Prorocentrum minimum								
Protoperidinium spp.	640	1200					20	40
Scrippsiella sp.	1280	4000	400					
Scrippsiella trochoidea	1920	4240	400					360
Unarmoured dinoflagellate	17120	15760	9280		40		280	920
Actinoptychus senarius					160	80		
Asterionellopsis glacialis	80		160	120	80			40
Centrale diatom					40	80		
Cerataulina pelagica	80		240	20				
Chaetoceros compressus		80	160	80	80	60		
Chaetoceros constrictus				20				
Chaetoceros convolutus var. *trisetosa*			80					
Chaetoceros debilis	800	1200	1280	40	40			160
Chaetoceros decipiens			80	20	40	20	20	
Chaetoceros ingolfianus		160	400					
Chaetoceros laciniosus		160	80					
Chaetoceros lorenzianus		80			40			40
Chaetoceros simplex			80				360	40
Chaetoceros socialis	2720	2560	1440	140				480
Chaetoceros spp.	720	2640	1360	400	200	160	60	360
Corethron criophilum			80		40	20	20	40
Coscinodiscus spp.	80				280	20		
Cylindrotheca closterium	400	160	880	80	640	460	240	160
Dactyliosolen fragilissimus					40			200
Detonula confervacea						20		
Ditylum brightwellii	240		80	40				
Eucampia zodiacus								40
Guinardia delicatula	240	80	80	120	40	60	20	320
Gyrosigma tennuissimum					80			
Lauderia annulata								
Leptocylindrus danicus				100				
Leptocylindrus minimus	640	400	480	40	40	40	60	
Navicula sp.						20		
Paralia marina					40	20		40
Pennate diatom						20		40
Pleurosigma angulatum					80	20		
Pleurosigma angulatum var. *strigosa*				20	40	60		
Pseudo-nitzschia delicatissima group	320	480	1440	180	80	20		240
Pseudo-nitzschia seriata group	160	160	80			20		
Skeletonema costatum	29280	168670	98112	8440	15280	8780	60	10080
Thalassionema nitzschioides			80			60		
Thalassiosira auguste-lineata	320	80	80	20	80	20		40
Thalassiosira baltica			80	40				
Thalassiosira spp.	320		320	120	240	260	40	
Copepoda		160		60	40		20	
Dictyocha speculum	1120	480	1600	200	80	20	80	440
Ebria tripartita								
Eutreptia / Eutreptiella	800	80	160	20				
Litostomatea	240	320	80		40			40
Mesodinium rubrum	1760	5040	1040		80		960	2680
Pollen							20	
Tintinnids	2480	1360	2000		80	20	340	640
Tintinnids sp a	22320							
Armoured dinoflagellate	3280	6240	960	60	120	40	20	440

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
22-Aug-00								
Alexandrium ostenfeldii								40
Alexandrium spp.				120				
Amphidinium cf. *carterae*			160	40				
Amylax triacantha								40
Armoured dinoflagellate	80		1760	160			60	800
Ceratium fusus	200	80		120	80	20	20	800
Ceratium kofoidii				40				
Ceratium lineatum	440	80	2880	920			60	1320
Ceratium longipes	80	240	160	240				160
Ceratium macroceros								40
Ceratium minutum							20	160
Ceratium spp.			160	40				
Ceratium tripos	160	240	800	280		20		1120
Dinophysis acuminata			640	200		20		80
Dinophysis acuta		80						200
Dinophysis norvegica	80	240		720			40	920
Dinophysis spp.								80
Gonyaulax digitale		240						
Gonyaulax spinifera		160	320					
Gyrodinium cf. *spirale*	360	1280	1600	1240	80		100	
Heterocapsa triquetra		320	1920	40				80
Prorocentrum micans								120
Prorocentrum minimum								40
Protoperidinium brevipes			160					
Protoperidinium spp.		80		120				40
Scrippsiella sp.			480	80				
Scrippsiella trochoidea	40		480	120			200	17280
Unarmoured dinoflagellate	80	640	1760	80			80	280
Actinoptychus senarius	40						40	
Asterionellopsis glacialis	80	320	480	880	440	160		
Centrale diatom				40		60		
Cerataulina pelagica	120		480			20		
Chaetoceros compressus	80	800	480	720	40	60		
Chaetoceros constrictus	40	80						40
Chaetoceros convolutus var. *trisetosa*	40						40	
Chaetoceros debilis	1240	3360	4800	1360	280	200		
Chaetoceros decipiens	120	160	320	120		60	40	
Chaetoceros diadema						40		
Chaetoceros furcellatus						20		
Chaetoceros ingolfianus	400	2480	1120	40		20		
Chaetoceros laciniosus	40	240	320	40	40			40
Chaetoceros lorenzianus	280	160	160				20	
Chaetoceros radicans					40	60		
Chaetoceros simplex					40		220	80
Chaetoceros socialis	1520	7200	15040			40		840
Chaetoceros spp.	2280	11680	7200	14080	960	580	20	120
Chaetoceros teres						20		
Corethron criophilum				120	40	20		
Coscinodiscus spp.				120		40		
Cylindrotheca closterium	240	320	960	480	520	1140	140	80
Dactyliosolen fragilissimus	40			40	40		240	
Detonula confervacea		320		40		40		
Ditylum brightwellii	120	240	480		40		20	
Eucampia zodiacus	320	160		40		160		
Guinardia delicatula	840	400	1280	520		380	20	40
Helicotheca tamesis	40							
Lauderia annulata	40			40				
Leptocylindrus danicus		80	640	160		60		
Leptocylindrus minimus	560	2560	480	360	80	80	20	80

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
22-Aug-00 (continued)								
Navicula sp.						40		
Odontella sinensis	80							
Paralia marina						20		
Pennate diatom								80
Pleurosigma angulatum	80				40			
Pleurosigma angulatum var. *strigosa*	80	80		160		40		
Pseudo-nitzschia sp.							20	
Pseudo-nitzschia delicatissima group	560	2320	3040	560	320	60		
Pseudo-nitzschia seriata group	80	560	1600	800		80		40
Rhizosolenia setigera								
Skeletonema costatum	9720	108550	85120	121910	18120	18840	220	200
Thalassionema nitzschioides	40	160		240	120	100		
Thalassiosira auguste-lineata	40	240	960	40	40			
Thalassiosira baltica					40			
Thalassiosira gravida		80	160					
Thalassiosira oestrupii	40							40
Thalassiosira spp.			160	240	440	60	40	
Copepoda	80		160	120		20		280
Dictyocha speculum	120	720	800	400	40	20	140	16160
Eutreptia / Eutreptiella			160	160				40
Helicostomella sp.								160
Mesodinium rubrum	840	400	2560	200		20	820	17960
Pollen	40							
Tintinnids	360	240	1920	200		20	100	200
28-Aug-00								
Alexandrium fundyense			80					80
Alexandrium fundyense (cyst)			80					
Amphidinium cf. *carterae*					160			
Armoured dinoflagellate	160	640	2640	240				
Ceratium fusus		400	80	320	160		20	640
Ceratium kofoidii		160						
Ceratium lineatum	1920	1680		1680	720		40	1360
Ceratium longipes	160		80	80			20	
Ceratium macroceros	320							
Ceratium minutum								240
Ceratium spp.		160		80				
Ceratium tripos	800	320		80	240		40	800
Dinophysis acuminata		240		80	160			80
Dinophysis acuta			80					
Dinophysis norvegica	160	160		80	560		20	480
Dinophysis spp.			80					
Gonyaulax spinifera			240					
Gyrodinium cf. *spirale*		400	160	400	80		180	
Heterocapsa triquetra		720	2160	720				320
Prorocentrum micans		80	80					
Prorocentrum minimum		240	160					160
Protoperidinium spp.			80	160			20	160
Scrippsiella sp.	160		960					7520
Scrippsiella trochoidea	160	1200	2480	400	80		220	3760
Unarmoured dinoflagellate		320	2640	240	240		40	400
Actinoptychus senarius					640	160		
Asterionellopsis glacialis	1760	160	640	1200	2400	2160		
Centrale diatom								
Cerataulina pelagica	480	80		160			20	320
Chaetoceros compressus	160	2080	560	560	880	160		
Chaetoceros constrictus		400	400					
Chaetoceros convolutus var. *trisetosa*		160			80			
Chaetoceros debilis	6560	6800	7680	7040	6960	3200	20	80
Chaetoceros decipiens	160	80	240		400	80	40	320

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
28-Aug-00 (continued)								
Chaetoceros diadema	160		160	160	240	160		
Chaetoceros didymus			80		80			
Chaetoceros ingolfianus		560	80					
Chaetoceros laciniosus	320	1520	1040	880	880			
Chaetoceros lorenzianus	1120	1600	1040	1360	2560			
Chaetoceros radicans				320				
Chaetoceros simplex				160			360	240
Chaetoceros socialis	36320	23120	22080	15440	14720		320	1120
Chaetoceros spp.	3200	8560	6640	13920	14320	10400	100	480
Corethron criophilum			80	160		80	160	
Coscinodiscus spp.					160	160		80
Cylindrotheca closterium	2400	880	800	1120	1440	1520	500	400
Dactyliosolen fragilissimus		240		400	80	80	80	80
Detonula confervacea					560	160		
Ditylum brightwellii	160	640	1040	960	720	240		
Eucampia zodiacus	320	240	160	400				
Guinardia delicatula	6880	5360	3840	4880	3120	1440	300	880
Guinardia flaccida		80						
Guinardia striata			80					
Gyrosigma tennuissimum				80				
Helicotheca tamesis								
Lauderia annulata					160			
Leptocylindrus danicus	160	240	240	1680	560	1200	20	80
Leptocylindrus minimus	2240	4480	2800	1360	2320	560	100	240
Navicula sp.							20	
Odontella regia					80			
Odontella sinensis					160			
Paralia marina				80				
Pennate diatom					320		20	
Pleurosigma / Gyrosigma			160				20	
Pleurosigma angulatum	160							
Pleurosigma angulatum var. *strigosa*	160	80		320	160	240	40	
Pseudo-nitzschia sp.								
Pseudo-nitzschia delicatissima group	2400	3360	6720	3920	4320	1600	20	
Pseudo-nitzschia seriata group	2880	6320	6320	6080	7600	880	20	
Rhizosolenia hebetata				80				
Rhizosolenia setigera					80	80		80
Skeletonema costatum	10560	1040	1200	1680	1920	6080	480	
Stephanopyxis turris		240		80	80			
Thalassionema nitzschioides	800	400	320	1200	880	320	60	80
Thalassiosira auguste-lineata				80				
Thalassiosira baltica				80	160			
Thalassiosira gravida		240	800		80			
Thalassiosira oestrupii		160						
Thalassiosira spp.		80	400	560	320	320		160
Thalassiothrix sp.								160
Triceratium alternans						80		
Copepoda								
Dictyocha speculum	4960	1680	160	2480	1200		1380	76820
Ebria tripartita		320	80	320			100	400
Eutreptia / Eutreptiella	160		80	400			80	880
Flagellate							40	
Helicostomella sp.								320
Litostomatea		80	240				20	
Mesodinium rubrum	4640	9920	4960	960	160	240	480	80160
Tintinnids	160	240	2880	640	80		420	1280

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
05-Sep-00								
Alexandrium fundyense								
Amphidinium cf. *carterae*				40				
Amylax triacantha								40
Armoured dinoflagellate	80	160	120		40			
Ceratium fusus	400	80	200	120	80			280
Ceratium lineatum	800	720	240	600	120		160	960
Ceratium longipes		80				40		
Ceratium minutum		40					40	80
Ceratium tripos		160	280	80			120	480
Dinophysis acuminata	80	80				40		
Dinophysis acuta		80	40					40
Dinophysis norvegica	160	240	120	80			40	360
Dinophysis spp.		40						
Gyrodinium cf. *spirale*			40	40			280	
Prorocentrum micans							40	40
Prorocentrum minimum	80	80	160					
Protoperidinium spp.		80			40			
Scrippsiella sp.								120
Scrippsiella trochoidea	160	120	40				160	840
Unarmoured dinoflagellate			120				120	
Actinoptychus senarius		80	280	80	360			
Asterionellopsis glacialis	80		40	240	520	1640	80	
Centrale diatom				80	40			
Cerataulina pelagica	640	120		80	120	80	320	40
Chaetoceros compressus			40	80		40		
Chaetoceros constrictus								40
Chaetoceros debilis	1680	2080	720	1040	1120	680		40
Chaetoceros decipiens	240	240	40					
Chaetoceros diadema						120		
Chaetoceros didymus							80	
Chaetoceros laciniosus	80	40		80	40			80
Chaetoceros lorenzianus	1520	1480	640	1040	1400	720		40
Chaetoceros simplex		80			40		200	200
Chaetoceros socialis	4240	12560	1040	1280	360		560	240
Chaetoceros spp.	240	1000	480	600	1480	1320	280	120
Corethron criophilum	80			80	80		40	40
Coscinodiscus spp.	80	120	120	40	80	160		80
Cylindrotheca closterium	640	280	360	680	1240	1320	440	240
Dactyliosolen fragilissimus	240	320	80	40	400	120	280	1320
Detonula confervacea				120		40		
Ditylum brightwellii	320	80	200	520	440	160		
Eucampia zodiacus	1680	1080	120	40	40			360
Guinardia delicatula	24880	17440	4040	4040	4280	5440	3600	4200
Guinardia flaccida	80	80	40			80		360
Lauderia annulata	80	120				80	80	40
Leptocylindrus danicus	160	800	120	200	200	160		160
Leptocylindrus mediterraneus				40				
Leptocylindrus minimus	960	1120	440	120	120	80	280	
Licmophora abbreviata								
Navicula sp.							40	
Odontella sinensis					40			
Paralia marina					40	40		
Pennate diatom					40		40	
Pleurosigma / Gyrosigma							40	
Pleurosigma angulatum	80							
Pleurosigma angulatum var. *strigosa*	80	80	80		200	80	120	
Pseudo-nitzschia sp.		120		40			120	120
Pseudo-nitzschia delicatissima group	1360	2880	1240	920	2200	1040		
Pseudo-nitzschia seriata group	1840	7200	2200	3200	2360	2080	200	320

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
05-Sep-00 (continued)								
Rhizosolenia hebetata								
Rhizosolenia setigera	160		40	120	40			
Rhizosolenia spp.				40				
Skeletonema costatum	480	120	240	280	440	800	2160	120
Stephanopyxis turris				40	80	40		
Thalassionema nitzschioides	1280	360	240	480	640	880	160	440
Thalassiosira gravida					80			
Thalassiosira oestrupii			40	40				
Thalassiosira spp.	80		160	240	200	240		
Triceratium alternans						80		
Copepoda		120					40	80
Dictyocha speculum	19840	4800	760	1080	240	120	25200	111890
Ebria tripartita	80	200	40					160
Eutreptia / Eutreptiella		160		40		40		
Helicostomella sp.							40	80
Litostomatea	80							
Mesodinium rubrum	3360	1520	1280		80		7520	46760
Pollen			40					
Tintinnids	240	160	160	40	40		560	280
Tintinnopsis campanula								80
13-Sep-00								
Amphidinium cf. *carterae*					80			
Armoured dinoflagellate		40	40	160	80	40	80	640
Ceratium fusus	80		480	240	80	20	80	400
Ceratium kofoidii			80					
Ceratium lineatum	1040	720	1200	400	160		160	3360
Ceratium longipes			40					120
Ceratium minutum								120
Ceratium spp.			80			20		
Ceratium tripos	160	240	240		320		160	960
Dinophysis acuminata	160			80				
Dinophysis acuta	80			80				
Dinophysis norvegica	80	80	280	80				280
Dinophysis spp.			40		80			80
Gonyaulax spinifera		40						
Gyrodinium cf. *spirale*			40				80	
Heterocapsa triquetra		200	440	80				80
Prorocentrum micans			80	80				80
Prorocentrum minimum		160	120					
Protoperidinium spp.			40		80			40
Scrippsiella sp.			40				40	
Scrippsiella trochoidea		280	120	80			80	3120
Unarmoured dinoflagellate			80					200
Actinoptychus senarius		160	80		480	160		40
Centrale diatom				160			40	
Cerataulina pelagica	480	120	40		160	40	1760	440
Chaetoceros debilis	400	120	40	80	80	20	120	
Chaetoceros decipiens				160			80	
Chaetoceros didymus								
Chaetoceros lorenzianus	1440	320	240	80	640	220	200	520
Chaetoceros simplex	160	80	240	80	80	40	2400	1480
Chaetoceros socialis	7760	2120	1400	80		20	3120	120
Chaetoceros spp.		40		240		140	40	160
Corethron criophilum		40	40	320	160	60		40
Coscinodiscus spp.	80	40	40		320	40	40	40
Cylindrotheca closterium	480	240	640	1520	1520	200	800	680
Dactyliosolen fragilissimus	9440	2240	2760	2000	5200	740	12200	46760
Detonula confervacea		200		1120		80		
Ditylum brightwellii	320	120	480	160	240	60	160	240

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
13-Sep-00 (continued)								
Eucampia zodiacus	6000	960					960	560
Guinardia delicatula	68470	56780	73480	76820	45840	8640	105210	116900
Guinardia flaccida	160	480	40	80	640		1160	1280
Guinardia striata		40	40					
Gyrosigma tenuissimum								
Lauderia annulata	80				80		80	80
Leptocylindrus danicus		840	160				920	240
Leptocylindrus minimus		120	320	80			240	600
Licmophora abbreviata							40	
Navicula sp.					80			
Odontella regia		40			80	100		
Odontella sinensis		80	120		80			
Paralia marina		160						
Pennate diatom		40				20		
Pleurosigma / Gyrosigma			40		80		120	40
Pleurosigma angulatum	80	200						
Pleurosigma angulatum var. *strigosa*	320	160	240	160	320	40	80	80
Pseudo-nitzschia sp.		40			80		1160	320
Pseudo-nitzschia delicatissima group	2400	2080	1560	4800	2160	280	120	360
Pseudo-nitzschia seriata group	4160	1840	4560	5120	2880	740	480	640
Rhizosolenia hebetata								
Rhizosolenia setigera	160	120	280	320	160	40	40	320
Skeletonema costatum	480	160	200	240	320	180	1160	240
Stephanopyxis turris					80	20		
Thalassionema nitzschioides	1760	1120	600	2480	880	580	400	1000
Thalassiosira baltica						20		
Thalassiosira gravida					80		40	
Thalassiosira oestrupii					80			
Thalassiosira spp.		40		80	560	240	560	120
Triceratium alternans						20		
Copepoda	240			80		20		240
Dictyocha fibula				160				
Dictyocha speculum	2640	560	560	3520	1120	120	600	160
Ebria tripartita			80	160	80		40	360
Eutreptia / Eutreptiella			120				40	80
Litostomatea					80			80
Mesodinium rubrum	7200	9200	3720		400	20	600	103540
Pollen							40	40
Tintinnids	800	320	520	160	80	20	160	240
Tintinnopsis campanula								40
18-Sep-00								
Alexandrium fundyense			80					80
Amphidinium cf. *carterae*				80				
Armoured dinoflagellate	120		320	80	40	20	200	4400
Ceratium fusus	200	40	720	560	40	20	40	720
Ceratium kofoidii	40		80					240
Ceratium lineatum	960		400	2000			720	38560
Ceratium longipes				80				80
Ceratium minutum								1920
Ceratium spp.				80				80
Ceratium tripos	240		320	480			40	4560
Dinophysis acuminata	40		80				40	240
Dinophysis acuta	80							
Dinophysis norvegica		80		240			80	
Gonyaulax digitale								1280
Gonyaulax spinifera		40					40	
Gyrodinium cf. *spirale*	120		160				1520	160
Heterocapsa triquetra	40			80				
Prorocentrum micans	40	160	80	160			40	240

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
18-Sep-00 (continued)								
Prorocentrum minimum			2400	800			80	400
Protoperidinium spp.	40				40			800
Scrippsiella trochoidea	160						200	11200
Unarmoured dinoflagellate			880				680	320
Actinoptychus senarius	160	400		240	280	360		
Asterionellopsis glacialis		120		160	40	20		
Centrale diatom								
Cerataulina pelagica	520	480	480	240	80	20	280	240
Chaetoceros compressus					40			
Chaetoceros debilis		320	1200	1280	40	20	120	
Chaetoceros decipiens	80		400	160		80		
Chaetoceros laciniosus		40						
Chaetoceros lorenzianus	80	640	640	560	160		40	
Chaetoceros simplex	40	240	80	400	80		1240	160
Chaetoceros socialis	520	7440	5120	6640	40			
Chaetoceros spp.	120	120	880	800	40	60	120	160
Corethron criophilum	40	40	160	400	80		80	80
Coscinodiscus spp.	40	200	240	240	200	80		80
Cylindrotheca closterium	80	320	720	1760	520	160	160	80
Dactyliosolen fragilissimus	4320	6520	5600	18800	1400	840	4080	5440
Detonula confervacea				17680	520	160		
Ditylum brightwellii	200	1440	6240	6720	600	340	120	
Eucampia zodiacus	3360	2240	80	80	80		1760	320
Guinardia delicatula	40	360	960	480	240	220	280	240
Guinardia flaccida	280	1000	80		200	40	1560	160
Guinardia striata	120	320	1280	1360	80	160		
Gyrosigma balticum		40						
Helicotheca tamesis					40			
Lauderia annulata				160			200	
Leptocylindrus danicus	560	6080	10560				5000	3440
Leptocylindrus mediterraneus					40			
Leptocylindrus minimus	320	840		160	440	60	640	160
Licmophora abbreviata	40							
Melosira spp.								
Navicula sp.						40		
Odontella regia		40				20		
Odontella sinensis	80			560	120	20	40	
Paralia marina					80			
Pennate diatom					80			
Pleurosigma / Gyrosigma		40				20	40	
Pleurosigma angulatum	40					20		
Pleurosigma angulatum var. *strigosa*	120		80	320	80	40	40	
Porosira glacialis			80				40	
Pseudo-nitzschia sp.		160					1240	
Pseudo-nitzschia delicatissima group	680	1960	8960	9200	880	340	160	80
Pseudo-nitzschia seriata group	200	2440	15680	19040	1400	400	560	80
Rhizosolenia setigera	480	200	400	1360	120	80	160	
Skeletonema costatum	360	560	6640	7360	1800	680	120	
Thalassionema nitzschioides	2120	2400	1440	6640	2080	720	640	19280
Thalassiosira baltica				80			80	
Thalassiosira gravida		40			40	20		
Thalassiosira oestrupii		40		80		20		
Thalassiosira spp.	120		2560	1840	320	180	240	80
Triceratium alternans					40	20		
Copepoda		160		160		20	80	320
Dictyocha fibula				80				
Dictyocha speculum	360	600	1120	800		20	360	3040
Ebria tripartita	120	40	240	1360	120		80	480
Eutreptia / Eutreptiella			240	320				

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
18-Sep-00 (continued)								
Flagellate			320					320
Helicostomella sp.								
Litostomatea	40		80	80	40		120	
Mesodinium rubrum	4960	4040	2560	80			2720	15200
Notholca spp.								80
Pollen					40			
Tintinnids	480	720	80	1360	80		160	560
25-Sep-00								
Armoured dinoflagellate	80	80						1280
Ceratium fusus	320	240		480		20	20	480
Ceratium kofoidii		160					20	160
Ceratium lineatum	240	800	240	480			200	16000
Ceratium longipes								320
Ceratium minutum							20	2000
Ceratium spp.	80							
Ceratium tripos	400	160	80	320			180	4160
Dinophysis acuminata	80							
Dinophysis acuta								160
Dinophysis norvegica		80		320				160
Dinophysis spp.								80
Gyrodinium cf. *spirale*		160	480			40	500	160
Heterocapsa triquetra			80					
Prorocentrum micans	160	80					20	480
Prorocentrum minimum		80	80			20		
Protoperidinium spp.					40			160
Scrippsiella trochoidea							60	13120
Unarmoured dinoflagellate				160				
Actinoptychus senarius	1280		320	480	360	180		80
Asterionellopsis glacialis		240	160	160		80		
Centrale diatom			480					
Cerataulina pelagica	240	320		1280	40			80
Chaetoceros compressus	80	160		800				
Chaetoceros concavicornis						20		
Chaetoceros debilis	320	720	160	640		20		80
Chaetoceros decipiens				160	40			
Chaetoceros diadema						20		
Chaetoceros didymus				160				
Chaetoceros lorenzianus	80	640	1680	640	120	40	20	80
Chaetoceros simplex	240	400	400	320		20	480	480
Chaetoceros socialis	1040	4640	1200					
Chaetoceros spp.	80	240	480	2400		60	20	80
Corethron criophilum	80	400	240		40	20	100	240
Coscinodiscus spp.	80	240	160	160	200	100	40	320
Cylindrotheca closterium	1920	960	9440	2720	480	240	20	80
Dactyliosolen fragilissimus	15360	1360	4400	3520	1520	440	20	320
Detonula confervacea	480				400	500		
Ditylum brightwellii	3120	5600	29200	12160	1320	440	140	160
Eucampia zodiacus	1040	640					320	
Guinardia delicatula	80	160	1920	1600	80	180		
Guinardia flaccida	560	960		320	80	20	520	240
Guinardia striata	1440	2720	1840	960	120	120	20	160
Gyrosigma tennuissimum							20	
Helicotheca tamesis	80							
Lauderia annulata		80				20	220	160
Leptocylindrus danicus	560	32160	49040	45920	40	40	2640	4560
Leptocylindrus mediterraneus						20		
Leptocylindrus minimus	160					40	220	
Navicula sp.	80							
Odontella regia		80						

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
25-Sep-00 (continued)								
Odontella sinensis	400		240	160	160		40	
Paralia marina					40	20		
Pennate diatom	80	80						
Pleurosigma / Gyrosigma	80		160					
Pleurosigma angulatum					40			
Pleurosigma angulatum var. *strigosa*		80		800	40	40		
Pseudo-nitzschia sp.	80				40		100	80
Pseudo-nitzschia delicatissima group	4480	3200	6160	10240	1080	240		80
Pseudo-nitzschia seriata group	9920	18400	21920	59040	3760	960	100	160
Rhizosolenia hebetata					80	100		
Rhizosolenia setigera	1200	640	640	480	40	20	80	
Rhizosolenia spp.					40			
Skeletonema costatum	1840	2560	4640	9120	1120	420	100	
Thalassionema nitzschioides	9760	7200	13360	22400	3840	960	560	14160
Thalassiosira gravida	80				40			
Thalassiosira spp.	160	160	1760	4800	360	80	160	
Triceratium alternans						20		
Copepoda		160	80	160			60	320
Dictyocha fibula		80					120	
Dictyocha speculum	480	160		480		20		2400
Ebria tripartita								400
Eutreptia / Eutreptiella		80						80
Flagellate								80
Litostomatea							40	80
Mesodinium rubrum	320	3120					480	15840
Pollen								
Tintinnids	400	240	240	480	40		260	880
03-Oct-00								
Amphidinium cf. *carterae*				20				
Armoured dinoflagellate			40	20		40	20	480
Ceratium fusus	80	80	80	20		40	20	320
Ceratium lineatum	560	80	240	40			240	6400
Ceratium longipes			40		20		20	160
Ceratium tripos	200		200	100	140		160	2080
Dinophysis acuminata			80					400
Dinophysis norvegica								320
Gonyaulax spinifera	40							
Gyrodinium cf. *spirale*		160					100	240
Heterocapsa triquetra								
Prorocentrum micans		80	80				40	560
Prorocentrum minimum	40							
Protoperidinium spp.		240						
Scrippsiella trochoidea			80				60	7120
Unarmoured dinoflagellate		160	40					160
Actinoptychus senarius	200		240	380	660	620	300	240
Asterionellopsis glacialis			40					
Bacillaria paxillifer					20			
Centrale diatom		80			40	20		
Cerataulina pelagica	200	880	200				160	
Chaetoceros compressus								80
Chaetoceros debilis		880	40	60				400
Chaetoceros decipiens	200			40		20	40	
Chaetoceros furcellatus						20		
Chaetoceros lorenzianus	120	480	40			20	100	2960
Chaetoceros similis					20			
Chaetoceros simplex	280	480	160	40	60	20	240	640
Chaetoceros socialis	520	1440					120	
Chaetoceros spp.	80	240	40	20		20		320
Corethron criophilum	160	320	160	40	60	20	220	320

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
03-Oct-00 (continued)								
Coscinodiscus spp.	80	80	120	40	20	80	40	
Cylindrotheca closterium	2120	3120	1880	220	520	580	260	
Dactyliosolen fragilissimus	280	320	480	80	360	120	3320	
Detonula confervacea	20200			600	320	1100		
Ditylum brightwellii	2080	9440	1040	500	600	320	120	80
Eucampia zodiacus	480	400					200	2800
Guinardia delicatula	920	1760	560	20	120	100		
Guinardia flaccida	160	160	120	60	100	80	320	400
Guinardia striata	600	5520	840	40	120	100	100	160
Gyrosigma fasciola								
Gyrosigma tennuissimum	40							
Helicotheca tamesis		80	40		20	60		
Lauderia annulata	80						160	240
Leptocylindrus danicus		60120	1880	60				43440
Leptocylindrus minimus	200	80	40				140	80
Navicula sp.					40	20		
Odontella regia	40							
Odontella sinensis	80		80		20	20	20	80
Paralia marina			40		40	40	20	
Pennate diatom				40	40			
Pleurosigma / Gyrosigma								
Pleurosigma angulatum	40		40				20	
Pleurosigma angulatum var. *strigosa*	40	320		20	20	40		
Pseudo-nitzschia sp.	80		80				20	
Pseudo-nitzschia delicatissima group	2320	6320	1080	160	440	480	140	320
Pseudo-nitzschia seriata group	1360	4800	720	40	300	360	60	880
Rhizosolenia hebetata					20			
Rhizosolenia imbricata						20		
Rhizosolenia setigera	360	320	120	120	100	60	360	320
Skeletonema costatum	1280	1040	800	260	440	340	380	240
Stephanopyxis turris		80						
Thalassionema nitzschioides	7360	5840	6080	2620	5480	3760	2860	9680
Thalassiosira baltica					40	40		
Thalassiosira oestrupii					20			
Thalassiosira spp.	360	720	40	80	120	80	340	80
Triceratium alternans						40		
Copepoda		80		60				
Dictyocha fibula				40	20			
Dictyocha speculum	120	80	200	20	40		100	560
Ebria tripartita							20	160
Eutreptia / Eutreptiella			40				20	
Flagellate						20		
Helicostomella sp.	40							
Mesodinium rubrum	3000	640	960	20		40	1400	6080
Tintinnids	1880	880	640	220	60	60	420	560
10-Oct-00								
Armoured dinoflagellate		40		100			20	60
Ceratium fusus	60	80	40	20	120	20	20	60
Ceratium kofoidii		40						100
Ceratium lineatum	80	160	40	40	40		40	680
Ceratium longipes	20		20				20	20
Ceratium macroceros	20							20
Ceratium minutum				20				
Ceratium spp.								
Ceratium tripos	160	400	60	20	120	80	80	460
Dinophysis acuminata			20					20
Dinophysis norvegica								120
Dinophysis tripos	60							
Gyrodinium cf. *spirale*		40	40	60			80	320

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
10-Oct-00 (continued)								
Heterocapsa triquetra				40				
Prorocentrum micans	60						60	100
Protoperidinium spp.								80
Scrippsiella trochoidea							40	260
Unarmoured dinoflagellate	20		20		20			40
Actinoptychus senarius	440	400	620	520	740	980	260	120
Asterionellopsis glacialis		40		60	60	20		
Centrale diatom					20			
Cerataulina pelagica	40							100
Chaetoceros constrictus							20	
Chaetoceros debilis							260	380
Chaetoceros decipiens				20			60	
Chaetoceros lorenzianus	40	40					60	220
Chaetoceros simplex	80	120		40	20	40	160	120
Chaetoceros socialis	20						20	500
Chaetoceros spp.		40					100	320
Corethron criophilum	260	320	200	120	280	120	300	260
Coscinodiscus spp.	20	400	120	200	260	180	80	40
Cylindrotheca closterium	320	2000	460	640	720	820	40	
Dactyliosolen fragilissimus		40	60		180		20	40
Detonula confervacea	320	3600		100		20	1820	4580
Ditylum brightwellii	240	1120	100	140	100	200	60	80
Eucampia zodiacus							20	1520
Guinardia delicatula	120	600	60	80	100		60	20
Guinardia flaccida					60		160	
Guinardia striata	120	720	40			100		40
Gyrosigma fasciola	20							
Gyrosigma tennuissimum		40						20
Helicotheca tamesis	20			20	20	20	20	
Lauderia annulata								60
Leptocylindrus danicus			20			40		
Leptocylindrus minimus	20	40	20		20		60	
Navicula sp.	60							60
Odontella sinensis	100	40	80	20	40	180		20
Paralia marina	60					20		
Pennate diatom		40	20			60		
Pleurosigma / Gyrosigma			20					
Pleurosigma angulatum	40	80						
Pleurosigma angulatum var. *strigosa*	140	40	40	120	160	100		
Pseudo-nitzschia sp.				20	20			
Pseudo-nitzschia delicatissima group	1160	2840	280	200	200	140	220	140
Pseudo-nitzschia seriata group	60	840	40	80	20	20	20	80
Rhizosolenia hebetata				20				
Rhizosolenia setigera	100	80		120	60	60		60
Rhizosolenia spp.	20					20		
Skeletonema costatum	640	1400	220	160	180	60	220	40
Thalassionema nitzschioides	1500	5520	1540	1680	2440	4340	1780	2820
Thalassiosira baltica			60					
Thalassiosira gravida							20	
Thalassiosira oestrupii		80				20		
Thalassiosira spp.	340	280	100	80	320	300	640	280
Triceratium alternans						20		
Copepoda	40	80				20		20
Dictyocha fibula	60	200	260	140	160	20		40
Dictyocha speculum		600	40	100	80	40		60
Ebria tripartita				20	20			
Eutreptia / Eutreptiella				20			20	
Helicostomella sp.								
Mesodinium rubrum	560	520	240	60	80		20	160

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
10-Oct-00 (continued)								
Pollen						20	20	
Tintinnids	1480	2240	380	420	260	160	360	1020
24-Oct-00								
Alexandrium fundyense								80
Alexandrium ostenfeldii								
Amphidinium cf. *carterae*								
Armoured dinoflagellate	20	40			100		20	
Ceratium fusus	80	40		40	100	20		80
Ceratium kofoidii			40				20	320
Ceratium lineatum	520	100	100	200	260		900	2240
Ceratium longipes		40						
Ceratium tripos	240	40	60		80		100	320
Dinophysis norvegica					40		20	
Dinophysis tripos					20			
Gonyaulax digitale	20							
Gonyaulax spinifera								
Gyrodinium cf. *spirale*	20	20	120	40	60		60	
Prorocentrum micans		20		120	80		40	480
Protoperidinium depressum			20					
Protoperidinium spp.	40	20	40	80			40	
Scrippsiella trochoidea		20	20					80
Unarmoured dinoflagellate		60	40	40			40	80
Actinoptychus senarius	700	1260	700	1120	680	300	120	640
Asterionellopsis glacialis	60	140			220	160		
Centrale diatom					80			
Chaetoceros constrictus	20							
Chaetoceros debilis	1080	260	120	480	540	140	1600	3120
Chaetoceros decipiens		40	20	40	80			
Chaetoceros lorenzianus		40			40		40	80
Chaetoceros simplex	60	140	20		100	20	520	
Chaetoceros socialis	5280	140	60	240		20	4940	8080
Chaetoceros spp.	20	140			20		80	160
Chaetoceros subtilis	20							
Corethron criophilum	220	440	180	280	440	160	40	320
Coscinodiscus spp.	60	20	100	200	20	60	60	160
Cylindrotheca closterium	140	280	80	400	120	180	120	480
Dactyliosolen fragilissimus						40		
Detonula confervacea				40				
Detonula pumila								
Ditylum brightwellii	200	640	220	520	500	120	140	
Eucampia zodiacus	7880	980	1000	3120	2400	400	5160	24960
Fragilaria spp.					20			
Grammatophora marina		20						
Guinardia delicatula	380	1460	740	720	540	160	20	
Guinardia flaccida	60	20					60	
Guinardia striata	20	60	60	40	20		140	
Helicotheca tamesis		20				20		
Lauderia annulata				40				
Leptocylindrus danicus		80						
Leptocylindrus minimus	20	60	20			20	20	
Navicula sp.	20	60		120	20	20		
Odontella regia		20						
Odontella sinensis	160	460	100	200	320	220		
Paralia marina		20		80				
Pennate diatom	40		20	80		20		
Pleurosigma / Gyrosigma	20	20						
Pleurosigma angulatum	20	20	20					
Pleurosigma angulatum var. *strigosa*	40		60	80	180	60	80	
Pseudo-nitzschia sp.	20	20				20		

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
24-Oct-00 (continued)								
Pseudo-nitzschia delicatissima group	280	1260	200	280	240	20	80	
Pseudo-nitzschia seriata group	100	400	60	120	180	20	80	320
Rhizosolenia hebetata		20						
Rhizosolenia setigera	40	20	100	200	20		20	
Skeletonema costatum	180	720	200	440	460	180	40	
Stephanopyxis turris							20	
Thalassionema nitzschioides	1220	2480	740	5440	4260	1860	440	80
Thalassiosira auguste-lineata		60					20	
Thalassiosira baltica	100							
Thalassiosira gravida	100						60	
Thalassiosira spp.	560	1460	840	840	1160	320	1060	320
Thalassiothrix longissima	20			40				
Triceratium alternans					20			
Copepoda			20					
Dictyocha fibula	20	100	60	160	20	20		
Dictyocha spec· lum	20	100			60		40	80
Ebria tripartita					40			
Eutreptia / Eutreptiella							60	
Mesodinium rubrum	680	780	220	560	180		1000	160
Pollen							20	
Tintinnids	100	20	160	360	200	40	480	80
14-Nov-00								
Amphidinium cf. *carterae*								20
Amphidinium cf. *sphenoides*							800	140
Armoured dinoflagellate	40		40	40	20	20	80	40
Ceratium fusus	60	20	20	20				
Ceratium lineatum	60	80	40	120			400	180
Ceratium macroceros				20				
Ceratium tripos	60	80	20	60	20		80	40
Dinophysis acuta		20						
Dinophysis norvegica		20			20			20
Dinophysis spp.		20						20
Gyrodinium cf. *spirale*	20	60	60	120			720	420
Heterocapsa triquetra			20					
Prorocentrum micans			40			20	160	60
Prorocentrum minimum	20			20				
Protoperidinium spp.	20	60	20	40			80	40
Scrippsiella sp.								
Scrippsiella trochoidea								20
Unarmoured dinoflagellate			20					
Actinoptychus senarius	280	580	1040	740	680	960	960	340
Asterionellopsis glacialis				20	20	40		
Centrale diatom								
Cerataulina pelagica								
Chaetoceros borealis				20				
Chaetoceros debilis					40		160	80
Chaetoceros lorenzianus				20				
Chaetoceros simplex							80	
Chaetoceros socialis							160	
Chaetoceros spp.					20			
Chaetoceros spp. (phaeoceros)			20					
Corethron criophilum	60	80	80	20	80	100	80	20
Coscinodiscus spp.	20	40	60	40	40	40	240	160
Cylindrotheca closterium	480	200	420	200	280	40	800	460
Dactyliosolen fragilissimus				80				
Detonula confervacea				20				
Ditylum brightwellii	440	200	700	700	640	280	80	280
Eucampia zodiacus	1200	1440	980	1040	1300	960	36880	21000
Guinardia delicatula	960	480	820	1020	460	300	480	880

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
14-Nov-00 (continued)								
Guinardia flaccida								140
Guinardia striata	40	20						
Gyrosigma tennuissimum					20			
Helicotheca tamesis						20		
Lauderia annulata	20							
Leptocylindrus mediterraneus								
Leptocylindrus minimus	80			20	40		160	20
Navicula sp.		20	60	100	140	140		40
Odontella regia		20		20		40		
Odontella sinensis	240	120	200	220	200	160	80	100
Paralia marina					20	20	160	
Pennate diatom	20		60		20		80	
Pleurosigma / Gyrosigma			20	20				
Pleurosigma angulatum	40	20	20	20	80	40		
Pleurosigma angulatum var. *strigosa*	40	160	60	80	80	160		60
Pseudo-nitzschia sp.			20					
Pseudo-nitzschia delicatissima group	220	60	260	220	120	20		40
Pseudo-nitzschia seriata group	140	300	20		160	60	1120	460
Rhizosolenia hebetata					20			20
Rhizosolenia imbricata								
Rhizosolenia setigera	100	40	20	40	60	20		20
Skeletonema costatum			20		60		80	
Stephanopyxis turris							160	
Thalassionema nitzschioides	100	180	160	640	340	500	160	80
Thalassiosira auguste-lineata	20	20	20			20		
Thalassiosira baltica	20							
Thalassiosira gravida				20			80	
Thalassiosira spp.	60	60	100	100	260	20	480	60
Copepoda	20	20	20					
Dictyocha fibula		20	20	40				
Dictyocha speculum	20	20	60	120	100			20
Ebria tripartita		20						
Eutreptia / Eutreptiella				20			160	20
Helicostomella sp.								
Litostomatea			20	20			240	
Mesodinium rubrum	540	140	1260				5280	760
Pollen	40							40
Tintinnids	60	40	20				400	120
19-Dec-00								
Armoured dinoflagellate					20	40	20	40
Ceratium fusus	20					20		
Ceratium lineatum	20						40	80
Ceratium spp.								20
Ceratium tripos						20		
Gyrodinium cf. *spirale*	40							20
Heterocapsa triquetra				20				
Prorocentrum minimum				20				
Unarmoured dinoflagellate								20
Actinoptychus senarius	180	220			760	420	80	140
Asterionellopsis glacialis						20		
Centrale diatom	60		80			20		
Chaetoceros spp.								
Corethron criophilum	20			20				40
Coscinodiscus spp.	40	80		20			20	20
Cylindrotheca closterium	240	40	180	140	60	160	980	320
Detonula confervacea								
Ditylum brightwellii	60		60	100	100	60		20
Eucampia zodiacus	40		40		20		20	380
Grammatophora marina			60				20	

ORGANISM	3	15	16-0m	16-10m	16-25m	16-50m	17	25
19-Dec-00 (continued)								
Guinardia delicatula	140		100	120	40	60	20	480
Guinardia flaccida	40							120
Guinardia striata								20
Gyrosigma fasciola						20	20	
Gyrosigma tennuissimum						20		
Helicotheca tamesis						20		
Lauderia annulata								
Leptocylindrus minimus	40	20			20		20	80
Melosira spp.					40		20	
Navicula sp.	20	20	40	60	20	120	20	60
Odontella regia		40						
Odontella sinensis	20			60	20	40		
Paralia marina		40	60		20	20		
Pennate diatom	120		80	40		40	60	20
Pleurosigma / Gyrosigma			20				20	
Pleurosigma angulatum		80		60	40			
Pleurosigma angulatum var. *strigosa*				60	60	20	40	
Pseudo-nitzschia delicatissima group	100		100	20	20	20	40	20
Pseudo-nitzschia seriata group							60	60
Rhabdonema spp.						20		
Rhizosolenia hebetata								
Rhizosolenia imbricata						40		
Rhizosolenia setigera			40	60		20	80	220
Skeletonema costatum					80	20		
Thalassionema nitzschioides	60	60		140	160	100		40
Thalassiosira baltica								80
Thalassiosira gravida								
Thalassiosira spp.	20	20	40	80	60	20	120	200
Copepoda		20						20
Dictyocha fibula								
Dictyocha speculum	20			20		20		
Dinobryon spp.							20	
Litostomatea							20	20
Mesodinium rubrum	360	80	240	20			340	2420
Pollen		40	20		20		20	20
Tintinnids	80	200	60	20			160	300

Appendix 3. Plant nutrient, temperature and salinity data during 1999-2000.

Date mm/dd/yy	Temp. Surface	Temp. Bottom	Salinity Surface	Salinity Bottom	Silicate Surface	Phosphate Surface	Nitrates Surface	Ammonia Surface	Nitrite Surface
Station 3									
01/13/99	2.0	2.8	31.64	31.94	10.07	1.126	10.08	4.86	0.28
02/09/99	1.8	2.4	31.12	31.51	10.52	1.092	9.63	3.53	0.19
03/18/99	2.4	2.2	31.33	31.37	10.16	1.080	10.00	4.83	0.20
04/13/99	4.1	3.8	31.34	31.35	9.72	1.064	9.55	2.64	0.25
05/04/99	6.7	5.5	30.20	30.62	8.87	0.899	7.89	2.09	0.25
05/18/99	7.1	6.4	31.70	31.42	1.81	0.711	3.02	1.32	0.16
05/25/99	7.9	7.1	30.78	30.92	2.74	0.780	3.37	1.63	0.18
06/01/99	9.0	7.8	31.04	31.21	1.43	0.397	0.49		0.09
06/08/99	10.3	7.9	31.12	31.34	1.22	0.577	0.83		0.13
06/15/99	9.5	9.0	31.41	31.44	1.89	0.708	2.59	3.37	0.26
06/21/99	11.9	9.0	31.55	31.56	2.52	0.632	1.83	2.41	0.20
06/29/99	10.8	9.8	31.48	31.56	1.75	0.583	1.38	1.89	0.13
07/06/99	12.8	10.5	31.53	31.61	2.20	0.525	1.11	2.60	0.16
07/13/99	11.1	10.5	31.76	31.79	2.87	0.617	1.94	2.24	0.17
07/20/99	13.2	11.0	31.72	31.87	1.87	0.686	0.43	1.83	0.13
07/27/99	13.0	12.0	31.63	31.69	3.19	0.592	1.17	4.21	0.19
08/03/99	14.3	12.6	31.68	31.82	4.72	0.809	2.06	6.16	0.26
08/10/99	12.8	11.7	31.99	32.06	3.56	0.696	2.87	2.31	0.19
08/17/99	14.0	12.3	31.83	32.02	3.02	0.740	2.30	2.04	0.24
08/24/99	14.2	12.8	31.81	31.95	1.22	0.788	0.24	1.97	0.11
08/31/99	14.1	12.8	32.10	32.18	1.77	0.731	1.43	0.99	0.13
09/07/99	14.0	13.2	32.44	32.30	1.53	0.707	1.10	1.50	0.10
09/14/99	13.9	12.9	32.38	32.43	2.53	0.995	1.89	2.09	0.22
09/21/99	14.8	13.6	32.72	32.26	1.45	0.744	1.02	2.14	0.23
09/28/99	13.5	13.0	32.27	32.33	3.24	0.859	3.52	2.03	0.31
10/05/99	12.8	12.6	32.27	32.42	2.72	0.885	3.13	2.80	0.33
10/18/99	11.1	11.1	32.37	32.38	6.36	1.201	7.45	3.45	0.38
11/09/99	10.0	10.3	33.02	33.06	7.90	0.972	9.34		0.34
12/14/99	8.5	8.6	30.90	32.30	11.17	1.058	10.75		0.23
01/19/00	2.8	2.6	32.29	32.25	9.85	1.032	10.00		0.20
02/14/00	2.1	2.1	32.20	32.23	9.21	0.910	11.67	0.52	0.21
03/14/00	3.0	2.8	31.16	31.68	10.67	0.942	11.25	1.94	0.15
04/11/00	5.0	3.9	30.95	31.44	9.94	0.977	10.58	1.98	0.19
05/02/00	6.0	5.0	30.67	31.21	9.62	0.976	9.74	2.33	0.26
05/16/00	7.3	6.2	30.52	30.85	8.77	0.912	8.79	3.42	0.28
05/23/00	8.0	6.8	30.46	31.02	6.33	0.870	7.59	2.49	0.27
05/30/00	8.9	6.7	29.89	30.99	6.21	0.785	6.79	1.62	0.24
06/06/00	8.5	8.1	31.19	31.18	0.58	0.609	1.64	1.66	0.14
06/13/00	9.7	8.1	31.35	31.36	0.83	0.607	1.79	2.58	0.12
06/20/00	10.2	8.3	31.44	31.59	1.02	0.515	1.46	2.02	0.11
06/27/00	12.0	9.8	31.46	31.54	1.53	0.757	1.04	2.73	0.14
07/04/00	10.3	9.9	31.61	31.66	3.01	0.863	3.31	3.28	0.12
07/17/00	13.0	12.1	31.34	31.38	2.13	0.671		0.95	0.11
07/25/00	14.0	11.7	31.50	31.68	2.72	0.625	2.58	5.53	0.33
07/31/00	13.5	12.8	31.64	31.67	1.16	0.416	1.16	2.43	0.15
08/08/00	14.8	11.9	31.85	31.97	2.07	0.600	3.18	4.53	0.28

Date mm/dd/yy	Temp. Surface	Temp. Bottom	Salinity Surface	Salinity Bottom	Silicate Surface	Phosphate Surface	Nitrates Surface	Ammonia Surface	Nitrite Surface
08/15/00	14.0	13.3	31.76	31.81	2.80	0.572	2.42	2.12	0.25
08/22/00	14.3	12.8	31.88	32.07	4.43	0.894	3.97	7.51	0.36
08/28/00	13.5	13.0	32.21	32.21	3.51	0.744	4.17	2.64	0.32
09/05/00	13.7	13.0	32.16	32.24	3.96	0.865	4.36	4.02	0.42
09/13/00	14.1	13.3	31.42	32.41	3.96	0.792	2.24	1.55	0.27
09/19/00	14.2	13.2	32.34	32.37	5.34	1.075	3.65	4.92	0.38
09/25/00	13.2	12.8	32.44	32.45	5.33	1.019	5.06	4.34	0.41
10/03/00	13.0	12.4	32.54	32.58	5.64	1.088	6.38	4.65	0.46
10/10/00	12.0	11.9	32.53	32.51	5.24	0.990	5.29	3.13	0.46
10/24/00	11.4	11.0	32.74	32.76	6.05	0.984	8.25	2.19	0.43
11/14/00	10.2	10.2	32.59	32.59	5.23	0.804	7.18	1.79	0.28
12/19/00	5.3	6.3	31.98	32.27	7.97	1.069	8.81	3.52	0.68
Station 15									
01/13/99	2.2	2.6	31.97	32.01	9.21	1.036	9.47	3.52	0.18
02/09/99	2.3	2.9	31.59	31.70	9.70	1.038	9.75	2.65	0.17
03/18/99	2.7	2.5	31.37	31.62	10.28	1.029	10.14	1.49	0.18
04/13/99	4.2	3.6	31.34	31.42	9.60	1.031	9.27	1.96	0.23
05/04/99	7.0				8.91	0.878	7.94	1.62	0.23
05/18/99	8.0	5.7	31.39	31.45	1.25	0.666	0.95	0.97	0.12
05/25/99	7.9	7.2	30.63	30.74	2.90	0.742	3.59	1.29	0.18
06/01/99	9.6	8.1	31.05	31.13	1.26	0.488	0.57		0.11
06/08/99	10.1	6.8	30.98	31.53	0.79	0.473	0.41		0.12
06/15/99	10.5	8.8	31.23	31.39	1.76	0.749	1.35	4.50	0.34
06/21/99	10.4	8.5	31.53	31.60	1.44	0.483	1.35	1.95	0.16
06/29/99	12.9	9.4	31.33	31.60	1.55	0.458	0.43	5.10	0.13
07/06/99	12.0	10.8	31.60	31.59	1.82	0.492	0.96	1.90	0.14
07/13/99	11.7	10.0	31.75	31.80	1.74	0.451	0.57	1.63	0.10
07/20/99	13.8	10.6	32.02	31.88	2.18	0.661	0.31	1.79	0.08
07/27/99	13.2	12.5	31.55	31.63	2.93	0.547	0.81	2.22	0.14
08/03/99	13.2	10.8	31.93	32.07	3.78	0.631	1.95	4.16	0.22
08/10/99	13.8	11.6	31.65	32.08	1.83	0.542	0.54	1.81	0.10
08/17/99	13.2	12.0	31.89	32.06	0.80	0.451	0.32	1.68	0.09
08/24/99	15.2	13.7	31.54	31.76	0.99	0.726	0.09	1.32	0.07
08/31/99	13.8	11.8	31.55	32.34	1.47	0.596	0.91	1.20	0.11
09/07/99	14.8	13.0	32.41	32.31	1.33	0.604	0.78	0.65	0.09
09/14/99	14.4	12.7	32.28	32.43	1.61	0.869	0.29	1.17	0.11
09/21/99	15.5	13.7	31.64	32.28	1.28	0.543	0.31	1.09	0.10
09/28/99	14.0	12.7	32.13	32.51	2.65	0.729	1.61	1.62	0.22
10/05/99	12.3	12.3	32.46	32.50	3.73	0.995	3.79	3.38	0.34
10/18/99	11.0	11.0	32.02	32.00	6.84	1.015	7.68	2.40	0.32
11/09/99	9.8	9.6	33.10	33.09	9.12	1.011	9.98		0.35
12/14/99	8.2	8.7	31.08	32.34	10.80	0.847	9.01		0.13
01/19/00	3.2	2.9	32.69	32.35	9.69	1.016	10.19		0.18
02/14/00	2.5	1.6	32.31	32.27	8.86	0.885	11.36	1.47	0.14
03/14/00	3.1	2.8	31.79	31.85	9.49	0.926	11.81	1.76	0.13
04/11/00	4.2	3.7	30.97	31.52	10.12	0.949	11.06	1.88	0.18
05/02/00	6.9	4.8	29.68	31.40	10.73	0.859	9.62	2.01	0.27
05/16/00	8.0	5.6	29.70	31.27	10.05	0.817	8.06	2.44	0.29

Date mm/dd/yy	Temp. Surface	Temp. Bottom	Salinity Surface	Salinity Bottom	Silicate Surface	Phosphate Surface	Nitrates Surface	Ammonia Surface	Nitrite Surface
Station 15									
05/23/00	8.0	7.2	30.09	30.47	8.25	0.850	8.31	2.51	0.25
05/30/00	9.0	6.4	29.44	30.19	6.34	0.664	5.63	0.93	0.23
06/06/00	8.9	6.9	31.10	31.43	0.66	0.562	1.53	1.24	0.11
06/13/00	9.8	8.0	31.06	31.36	0.61	0.443	1.20	2.41	0.10
06/20/00	11.0	7.8	31.44	31.59	1.08	0.492	1.39	1.50	0.10
06/27/00	11.5				1.35	0.684	0.64	1.62	0.11
07/04/00	11.0	9.1	31.58	30.73	1.85	0.797	1.66	2.30	0.09
07/11/00	12.1	10.1	31.67	31.76	1.23	0.498	0.22	1.34	0.08
07/17/00	13.0	12.0	31.32	31.48	2.69	0.880		0.93	0.11
07/25/00	13.0	11.6	31.71	31.69	3.00	0.448	1.58	1.37	0.19
07/31/00	14.3	12.2	31.63	31.70	0.59	0.374	0.57	1.26	0.07
08/08/00	13.2	11.7	31.90	32.00	0.63	0.380	0.67	1.00	0.11
08/15/00	15.2	13.4	31.72	31.80	0.73	0.471	0.37	1.12	0.10
08/22/00	14.2	12.5	32.03	32.19	1.09	0.444	0.68	1.46	0.13
08/28/00	13.5	12.5	32.18	32.24	1.29	0.435	1.30	2.54	0.19
09/05/00	13.0	12.5	32.27	32.30	2.64	0.665	2.54	2.05	0.26
09/13/00	14.0	13.6	32.10	32.51	3.44	0.649	1.70	0.45	0.20
09/19/00	13.5	12.7	32.38	32.50	4.68	0.858	3.22	1.51	0.33
09/25/00	13.3	12.7	32.44	32.51	3.25	0.746	3.05	2.18	0.29
10/03/00	13.2	12.1	32.61	32.69	3.44	0.821	3.64	1.20	0.31
10/10/00	11.3	11.7	32.51	32.49	4.65	0.905	5.06	1.52	0.49
10/24/00	10.4	11.1	32.83	32.84	5.71	0.901	7.67	1.43	0.40
11/14/00	10.4	13.6	32.10	32.51	5.64	0.823	7.03	1.20	0.26
12/19/00	5.1	6.6	31.63	32.32	7.48	0.963	7.05	2.52	0.57
Station 17									
01/13/99	2.0	2.8	30.95	31.55	10.30	0.910	9.52	5.03	0.19
02/09/99	1.0	2.0	29.58	30.60	12.05	0.915	9.44	3.35	0.18
03/18/99	2.0	1.7	29.34	30.45	11.38	1.110	9.30	2.41	0.21
04/13/99	3.9	3.7	27.78	30.03	12.42	1.014	8.67	2.83	0.22
05/04/99	7.2	5.7	28.47	30.35	3.79	0.605	2.35	2.53	0.21
05/18/99	8.2	7.8	30.16	30.17	1.55	0.639	0.99	2.61	0.16
05/25/99	9.0	8.1	30.52	30.76	1.45	0.655	1.44	1.73	0.13
06/01/99	10.2	8.8	29.78	30.67	3.45	0.661	1.42		0.20
06/08/99	10.3	8.7	30.31	31.18	2.55	0.585	1.28		0.17
06/15/99	12.0	11.2	30.14	30.22	3.04	0.650	2.16	3.50	0.22
06/21/99	11.0	9.7	31.09	31.32	2.47	0.531	1.57		0.19
06/29/99	12.5	11.9	30.67	30.86	1.48	0.570	0.64	1.90	0.09
07/06/99	12.8	11.4	31.14	31.38	1.97	0.524	0.84	5.00	0.12
07/13/99	12.8	11.9	30.99	31.48	1.42	0.541	0.86	3.59	0.11
07/20/99	13.0	12.5	31.35	31.43	1.20	0.514	0.61	1.55	0.08
07/27/99	14.1	12.2	30.60	31.80	1.56	0.624	0.78	3.67	0.11
08/03/99	14.0	13.7	30.89	31.12	2.57	0.610	0.90	2.15	0.13
08/10/99	14.0	13.0	30.99	31.65	3.48	0.736	1.55	3.02	0.16
08/17/99	13.1	13.4	31.28	31.58	4.59	0.812	3.07	2.42	0.23
08/24/99	14.8	13.7	29.42	31.72	2.23	0.789	0.26	1.95	0.09
08/31/99	14.0	13.9	28.61	31.64	3.01	0.878	1.54	2.11	0.13
09/07/99	15.0	14.1	30.29	32.04	2.61	0.780	1.23	0.77	0.11

Date mm/dd/yy	Temp. Surface	Temp. Bottom	Salinity Surface	Salinity Bottom	Silicate Surface	Phosphate Surface	Nitrates Surface	Ammonia Surface	Nitrite Surface
09/14/99	15.0	14.5	31.78	31.80	4.17	1.015	2.23	2.96	0.27
09/21/99	14.5	14.0	30.29	31.95	3.77	0.760	2.16	3.97	0.30
09/28/99	14.1	13.7	29.73	31.60	7.85	0.921	3.82	3.85	0.42
10/05/99	12.9	12.9	26.81	31.63	5.98	0.883	3.88	3.29	0.33
10/18/99	11.4	11.7	30.88	31.92	7.13	1.133	6.25	3.57	0.35
11/09/99	9.2	9.5	30.93	31.71	10.16	0.958	8.33		0.38
12/14/99	8.0	8.0	24.26	31.56	16.86	0.921	9.70		0.31
01/19/00	1.8	2.8	29.95	30.79	14.45	0.950	10.19		0.20
02/14/00	1.5	1.8	30.74	31.13	11.35	0.953	11.28	1.11	0.18
03/14/00	2.1	2.7	28.30	30.79	13.13	0.821	11.14	2.56	0.16
04/11/00	4.6	4.3	21.19	30.53	19.66	0.619	8.32	4.75	0.24
05/02/00	6.1	5.2	27.62	29.60	13.60	0.850	8.37	3.86	0.22
05/16/00	8.1	6.5	26.75	30.06	11.62	0.754	7.12	4.01	0.25
05/23/00	10.0	7.1	25.78	30.35	9.19	0.600	4.60	3.78	0.24
05/30/00	8.5	7.5	28.99	30.34	3.74	0.622	3.05	2.94	0.22
06/06/00	9.5	8.5	29.03	30.17	1.49	0.617	1.95	3.99	0.15
06/13/00	9.4	8.8	29.89	30.59	1.22	0.537	1.57	2.64	0.14
06/20/00	10.5	9.3	29.43	30.82	2.12	0.590	1.87	2.52	0.16
06/27/00	12.0	9.5	30.50	31.36	2.23	0.711	1.65	3.75	0.18
07/04/00	12.2	11.7	29.65	30.04	3.76	0.813	2.96	3.30	0.17
07/11/00	13.0	10.6	30.62	31.44	4.96	0.862	3.88	3.51	0.28
07/17/00	14.0	12.2	30.20	30.93	4.10	0.718	2.29	2.11	0.24
07/25/00	13.3	11.6	30.96	31.57	2.67	0.518	1.43	2.97	0.15
07/31/00	13.7	13.5	30.33	30.42	3.08	0.431	1.81	3.19	0.21
08/08/00	13.5	12.4	31.20	31.75	5.07	0.670	3.77	3.36	0.29
08/15/00	14.0	13.4	30.89	31.14	6.59	0.725	4.70	2.81	0.33
08/22/00	14.0	13.1	30.66	31.59	7.40	0.810	5.37	3.33	0.44
08/28/00	14.2	13.5	30.58	31.78	7.86	0.807	5.46	2.49	0.49
09/05/00	13.4	13.3	31.50	31.84	5.36	0.832	5.37	2.71	0.48
09/13/00	14.8	13.1	31.85	32.23	4.77	0.780	2.11	1.67	0.21
09/19/00	14.3	13.4	31.41	31.99	6.19	0.924	3.61	2.18	0.33
09/25/00	13.3	13.1	31.24	32.05	6.79	0.989	4.61	4.25	0.37
10/03/00	12.9	12.6	31.94	32.00	7.49	1.077	6.81	2.96	0.50
10/10/00	11.6	11.9	31.43	31.44	7.14	1.071	6.96	2.59	0.67
10/24/00	10.7	10.9	31.94	32.30	6.79	1.048	8.61	4.68	0.58
11/14/00	9.8	9.6	31.81	32.02	2.45	0.772	3.77	2.68	0.26
12/19/00	3.6	6.0	30.57	32.08	10.29	1.046	8.26	3.94	0.50
Station 25									
05/04/99	6.5	5.1	30.65	30.86	2.27	0.642	2.02	1.78	0.16
05/18/99	8.0	6.4	31.13	31.36	1.07	0.609	1.77	1.26	0.12
05/25/99	8.5	7.0	31.05	31.17	1.03	0.650	1.23	1.00	0.12
06/01/99	10.8	7.7	30.86	31.30	1.29	0.464	1.06		0.15
06/08/99	13.0	8.1	29.95	31.37	0.88	0.355	0.26		0.09
06/15/99	12.8	8.7	30.87	31.47	0.74	0.377	0.47	3.30	0.12
06/21/99	13.6	9.0	31.04	31.53	1.32	0.376	0.32	1.44	0.08
06/29/99	12.0	9.8	31.13	31.61	1.60	0.464	1.19	1.94	0.13
07/06/99	14.0	10.2	31.08	31.69	1.97	0.442	0.41	1.91	0.07
07/13/99	11.1	10.5	31.77	31.78	3.36	0.636	2.79	1.96	0.20

Date mm/dd/yy	Temp. Surface	Temp. Bottom	Salinity Surface	Salinity Bottom	Silicate Surface	Phosphate Surface	Nitrates Surface	Ammonia Surface	Nitrite Surface
07/20/99	15.3	10.9	31.43	31.88	1.83	0.408	0.31	1.31	0.06
07/27/99	14.4	11.9	31.63	31.73	1.90	0.466	1.03	2.08	0.14
08/03/99	15.2	12.0	31.55	31.90	2.41	0.470	0.20	1.77	0.08
08/10/99	15.0	12.0	31.73	32.02	4.28	0.555	0.85	1.69	0.14
08/17/99	16.0	12.0	31.38	32.10	3.68	0.444	0.23	1.81	0.09
08/24/99	17.0	12.3	29.20	32.04	1.45	0.609	0.27	1.85	0.10
08/31/99	14.5	12.7	32.29	32.21	2.91	0.804	1.53	1.64	0.13
09/07/99	14.2	12.9	32.30	32.32	2.25	0.704	1.42	2.21	0.12
09/13/99	14.0	13.0	32.29	32.39	3.43	0.986	2.55	2.48	0.26
09/21/99	15.1	13.4	32.41	32.32	1.49	0.553	0.33	1.06	0.11
09/28/99	13.9	13.2	32.17	32.25	2.81	0.790	2.82	2.09	0.27
10/05/99	12.9	12.7	31.25	32.24	3.18	0.930	2.40	2.73	0.25
10/18/99	11.5	11.6	32.27	32.59	2.45	0.972	3.34	1.94	0.23
11/09/99	9.3	10.2	32.12	32.62	5.06	0.835	5.28		0.31
12/14/99	7.4	8.4	27.84	32.34	13.23	0.991	9.69		0.30
01/19/00	1.5	3.9	31.86	32.22	11.41	0.997	9.92		0.21
02/14/00	2.0	2.5	32.07	32.24	9.76	0.850	12.08	0.85	0.16
03/14/00	3.0	2.8	30.98	31.55	11.15	0.995	11.42	1.35	0.13
04/11/00	5.3	4.0	28.15	31.13	15.02	0.800	9.84	2.09	0.16
05/02/00	6.1	5.3	28.89	30.92	11.27	0.923	9.11	2.29	0.23
05/16/00	10.0	6.3	28.38	30.65	2.98	0.383	1.38	2.33	0.11
05/23/00	9.0	6.5	29.87	31.07	0.59	0.562	1.31	2.37	0.10
05/30/00	10.1	6.9	30.05	31.06	0.78	0.448	1.28	1.63	0.13
06/06/00	8.8	7.7	31.06	31.19	0.55	0.579	1.85	0.76	0.14
06/13/00	10.4	8.0	30.81	31.36	0.36	0.443	1.09	0.68	0.08
06/20/00	13.2	8.6	30.56	31.44	1.10	0.497	1.28	1.44	0.10
06/27/00	13.8	9.3	30.60	31.57	1.84	0.572	0.19	1.73	0.05
07/04/00	12.0	9.7	31.36	31.63	2.91	0.704	1.71	1.39	0.08
07/11/00	13.6	10.2	30.92	31.68	2.58	0.478	0.34	4.13	0.11
07/17/00	12.0	10.7	31.59	31.66	2.89	0.575	2.73	2.39	0.19
07/25/00	16.3	11.3	31.27	31.73	1.66	0.289	0.57	1.25	0.07
07/31/00	15.0	12.0	31.52	31.74	3.07	0.423	1.02	1.23	0.16
08/08/00	15.5	11.9	31.57	31.95	3.67	0.423	0.83	1.80	0.15
08/15/00	13.5	12.7	31.87	31.88	3.83	0.673	3.70	3.50	0.29
08/22/00	15.3	12.6	31.87	32.04	5.56	0.654	1.48	2.63	0.24
08/28/00	14.3	12.6	31.88	32.18	4.96	0.686	3.28	2.28	0.34
09/05/00	13.5	12.8	32.13	32.24	2.58	0.788	3.44	1.33	0.38
09/13/00	14.1	12.9	29.46	32.30	3.62	0.671	0.64	0.38	0.10
09/19/00	14.6	12.9	32.03	32.38	4.19	0.688	0.73	0.67	0.14
09/25/00	13.7	12.7	32.24	32.44	4.14	0.779	3.25	1.59	0.29
10/03/00	13.5	12.3	32.38	32.56	4.81	0.890	4.19	0.56	0.39
10/10/00	12.0	12.0	32.25	32.53	4.77	0.884	6.38	2.11	0.56
10/24/00	11.5	11.1	32.59	32.70	4.42	0.835	6.71	1.00	0.50
11/14/00	10.2	10.0	32.58	32.62	4.34	0.778	6.93	2.07	0.33
12/19/00	4.8	5.9	31.82	32.21	7.10	0.918	6.39	4.15	0.48